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32

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Genetic Psychology Monographs (continued)

VOLUME 1-1926

1. Performance tests for children of pre-school age—R. STUTSMAN
2. An experimental study of the cideitic type—H. KLÜVER
- 3 & 4. A study of natio-racial mental differences—N. D. M. HIRSCH
5. A psychological study of juvenile delinquency by group methods—J. W. BRIDGES AND K. M. B. BRIDGES
6. The influence of puberty praecox upon mental growth—A. GESSLE

VOLUME 2-1927

- 1 & 2. The mind of a gorilla—R. M. YERKES
3. The role of eye-muscles and mouth-muscles in the expression of the emotions—K. DUNLAP
4. Family similarities in mental-test abilities—R. R. WILLOUGHBY
5. Coordination in the locomotion of infants—L. H. BURNSEDE
6. The mind of a gorilla: Part II. Mental development—R. M. YERKES

VOLUME 3-January-June, 1928

1. An experimental study of the olfactory sensitivity of the white rat—J. R. LIGGETT
2. A photographic study of eye movements in reading formulae—M. A. TINKER
3. An experimental study of the East Kentucky mountaineers—N. D. M. HIRSCH
4. Responses of foetal guinea pigs prematurely delivered—C. T. AVERY
5. Objective differentiation between three groups in education (teachers, research workers, and administrators)—M. B. JENSEN
6. The effect of segregation on the sex behavior of the white rat as measured by the obstruction method—M. JENKINS

VOLUME 4-July-December, 1928

1. Observation and training of fundamental habits in young children—E. A. BOTT, W. E. BLATZ, N. CHANT, AND H. BOTT
- 2 & 3. Determination of a content of the course in literature of a suitable difficulty for junior and senior high school students—M. C. BURCH
- 4 & 5. Methods for diagnosis and treatment of cases of reading disability—M. MONROE
6. The relative effectiveness of lecture and individual reading as methods of college teaching—E. B. GREENE

VOLUME 5-January-June, 1929

1. The age factor in animal learning: I. Rats in the problem box and the maze—C. P. STONE
2. The effect of delayed incentive on the hunger drive in the white rat—E. L. HAMILTON
3. Which hand is the eye of the blind?—J. M. SMITH
4. The effect of attitude on free word association-time—A. G. EKDAHL
5. The localization of tactual space: A study of average and constant errors under different types of localization—L. E. COLE
6. The effects of gonadectomy, vasotomy, and injections of placental and orchic extracts on the sex behavior of the white rat—H. W. NISSEN

VOLUME 6-July-December, 1929

1. Learning and growth in identical infant twins: An experimental study by the method of co-twin control—A. GESSLE AND H. THOMPSON
2. The age factor in animal learning: II. Rats on a multiple light discrimination box and a difficult maze—C. P. STONE
3. The acquisition and interference of motor habits in young children—E. MCGINNIS
4. A vocational and socio-educational survey of graduates and non-graduates of small high schools of New England—A. D. MUELLER
- 5 & 6. A study of the smiling and laughing of infants in the first year of life—R. W. WASHBURN

VOLUME 7-January-June, 1930

1. Tensions and emotional factors in reaction—E. DUFFY
2. Teacher influence on class achievement: A study of the relationship of estimated teaching ability to pupil achievement in reading and arithmetic—H. R. TAYLOR
- 3 & 4. A study of the effect of inverted retinal stimulation upon spatially coordinated behavior—P. H. EWERT
5. A study of the mental development of children with lesion in the central nervous system—E. E. LORN
6. An experimental study upon three hundred school children over a six-year period—N. D. M. HIRSCH

VOLUME 8-July-December, 1930

1. The amount and nature of activities of newborn infants under constant external stimulating conditions during the first ten days of life—O. C. IRWIN
2. Race and social differences in performance tests—S. D. FORTEUS, *et al.*
3. Language and growth: The relative efficacy of early and deferred vocabulary training, studied by the method of co-twin control—L. C. STRAYER
4. Eye-movements and optic nystagmus in early infancy—J. M. MCGINNIS
- 5 & 6. Reactions of kindergarten, first-, and second-grade children to constructive play materials—L. FARWELL

VOLUME 9-January-June, 1931

- 1 & 2. The status of the first-born with special reference to intelligence—H. H. HSIAO
- 3 & 4. An experimental study of bright, average, and dull children at the four-year mental level—H. P. DAVIDSON
5. An historical, critical, and experimental study of the Seashore-Kwalwasser test battery—P. R. FARNSWORTH
6. A comparison of difficulty and improvement in the learning of bright and dull children in reproducing a descriptive selection—F. T. WILSON

VOLUME 10-July-December, 1931

1. A comparative study of a group of southern white and negro infants—M. B. MCGRAW
- 2 & 3. An experimental study of prehension in infants by means of systematic cinema records—H. M. HALVERSON
4. The limits of learning ability in kittens—A. M. SHUEY
- 5 & 6. The effect of habit interference upon performance in maze learning—O. W. ALM

VOLUME 11-January-June, 1932

1. General factors in transfer of training in the white rat—T. A. JACKSON
2. The effect of color on visual apprehension and perception—M. A. TINKER
3. The reliability and validity of maze experiments with white rats—R. LEPPER
4. A critical study of two lists of best books for children—F. K. SHUTTLEWORTH
- 5 & 6. Measuring human energy cost in industry: A general guide to the literature—R. M. PAGE

VOLUME 12-July-December, 1932

1. Family resemblances in verbal and numerical abilities—H. D. CARTER
2. The development of fine prehension in infancy—B. M. CASTNER
- 3 & 4. The growth of adaptive behavior in infants: An experimental study at seven age levels—H. M. RICHARDSON
- 5 & 6. Differential reactions to taste and temperature stimuli in newborn infants—K. JENSEN

VOLUME 13-January-June, 1933

1. A critique of sublimation in males: A study of forty superior single men—W. S. TAYLOR
2. A study of the nature, measurement, and determination of hand preference—H. L. KOCI, *et al.*
3. The growth and decline of intelligence: A study of a homogeneous group between the ages of ten and sixty—H. E. JONES AND H. S. CONRAD
4. The relation between the complexity of the habit to be acquired and the form of the learning curve in young children—M. L. MATTHEW
5. Eating habits in relation to personality development of two- and three-year-old children: A study of sixty-diet children in two nursery schools—A. A. ELIOT
6. Coordinating mechanisms of the spinal cord—O. C. INCEBRIEN

Genetic Psychology Monographs (continued)

VOLUME 14—July-December, 1933

1. Mental growth during the first three years: A developmental study of sixty-one children by repeated tests—N. BAYLEY
2. A study of triplets: including theories of their possible genetic relationships—F. N. ANDERSON AND N. V. SCHEIDEMANN
3. The objective measurement of emotional reactions—H. V. GASKILL
4. Development of behavior in the fetal cat—J. D. CORONIOS
5. A study of certain language developments of children in grades four to twelve, inclusive—L. L. LABRANT
6. The effect of early and delayed practice on memory and motor performances studied by the method of co-twin control—J. R. HIGGARD

VOLUME 15—January-June, 1934

1. Studies in the psychology of tone and music—P. R. FARNSWORTH
2. Motor learning of children in equilibrium in relation to nutrition—E. L. BREEKE
3. Discrimination limits of pattern and size in the goldfish *Carassius auratus*—J. B. ROWLEY
4. Limits of learning ability in the white rat and the guinea pig—B. F. RIESS
- 5 & 6. The limits of learning ability in rhesus monkeys—H. A. FJELD

VOLUME 16—July-December, 1934

1. A statistical study of ratings on the California Behavior Inventory for Nursery-School Children—H. S. CONRAD
2. An eye-movement study of objective examination questions—A. FRANDSEN
3. An experimental study of constitutional types—O. KLINERBERG, S. E. ASCH, AND H. BLOCK
4. The development of a battery of objective group tests of manual laterality, with the results of their application to 1300 children—W. N. DUBOIS
- 5 & 6. An experimental study in the prenatal guinea-pig of the origin and development of reflexes and patterns of behavior in relation to the stimulation of specific receptor areas during the period of active fetal life—L. CARMICHAEL

VOLUME 17—January-December, 1935

1. Organization of behavior in the albino rat—R. L. TIGHE
2. Brightness discrimination in the rhesus monkey—M. P. CRAWFORD
3. The limits of learning ability in cebus monkeys—A. M. KOCH
4. Nature-nurture and intelligence—A. M. LEAHY
5. On intelligence of epileptic children—E. B. SULLIVAN AND L. GAGAGAN
6. A study of the play of children of preschool age by an unobserved observer—D. L. COCKRELL

VOLUME 18—January-December, 1936

1. Sex differences in variational tendency—Q. MCNEMAN AND L. M. TERMAN
2. The process of learning to dress among nursery-school children—C. B. KEY, M. R. WHITE, M. P. HONZIK, A. B. HEINIKY, AND D. ERWIN
3. A study of the present social status of a group of adults, who, when they were in elementary schools, were classified as mentally deficient—W. R. BALLER
4. The influence of specific experience upon mental organizations—A. ANASTASI
- 5 & 6. Studies in aggressiveness—L. BENDER, S. KEISER, AND P. SCHILDER

VOLUME 19—January-December, 1937

1. Psychological bases of self-mutilation—C. DABROWSKI
2. Masculine temperament and secondary sex characteristics: A study of the relationship between psychological and physical measures of masculinity—H. GILKINSON
3. A psychological study of forty unmarried mothers—R. D. NOTTINGHAM
4. Behavior problems in the children of psychotic and criminal parents—L. BENDER
5. Domination and integration in the social behavior of young children in an experimental play situation—H. H. ANDERSON
6. The sequential patterning of prone progression in the human infant—L. B. AMES

VOLUME 20—January-December, 1938

1. The relationship between characteristics of personality and physique in adolescents—P. S. DE Q. CAROT
2. Behavior problems of elementary school children: A descriptive and comparative study—I. Y. MASTEN
3. Graphic representation of a man by four-year-old children in nine prescribed drawing situations—P. F. GRIDLEY
4. Differences between two groups of adult criminals—R. S. TOLMAN
5. A comparative study by means of the Rorschach method of personality development in twenty pairs of identical twins—E. TROUP
6. Individual differences in the facial expressive behavior of preschool children: A study by the time-sampling method—C. SWAN

VOLUME 21—January-December, 1939

1. An experimental analysis of "level of aspiration"—R. GOULD
2. Some light on the problem of bilingualism as found from a study of the progress in mastery of English among preschool children of non-American ancestry in Hawaii—M. E. SMITH
3. Domination and social integration in the behavior of kindergarten children and teachers—H. H. ANDERSON
4. The capacity of the rhesus and cebus monkey and the gibbon to acquire differential response to complex visual stimuli—W. E. GALT
5. The social-sex development of children—E. H. CAMPBELL

VOLUME 22—January-December, 1940

1. Measuring human relations: An introduction to the study of the interaction of individuals—E. D. CHAPPEL
2. Aggressive behavior in young children and children's attitudes toward aggression—M. D. FITZ
3. Student attitudes toward religion—E. NELSON
4. The prediction of the outcome-on-furlough of dementia praecox patients—J. S. JACOB
5. Significant characteristics of preschool children as located in the Conrad inventory—K. H. READ
6. Learning by children at noon-meal in a nursery school: Ten "good" eaters and ten "poor" eaters—J. B. McCAY, E. B. WARING, AND P. J. KRUSE

Studies in the interpretation of play: I. Clinical observation of play disruption in young children—E. H. ERIKSON

VOLUME 23—January-June, 1941

1. An analysis of certain variables in a developmental study of language—F. M. YOUNG
2. Infant development under conditions of restricted practice and of minimum social stimulation—W. DENNIS
3. An analysis of the mental factors of various age groups from nine to sixty—B. BALINSKY
4. Factors influencing performance on group and individual tests of intelligence: I. Rate of work—M. W. BENNETT
5. Individual differences in apperceptive reaction: A study of the response of preschool children to pictures—E. W. AMEN

VOLUME 24—July-December, 1941

1. Twins T and C from infancy to adolescence: A biogenetic study of individual differences by the method of co-twin control—A. GSKELL AND H. THOMPSON
2. Finger nail-biting: Its incidence, incidence, and amelioration—A. L. BILLIC
3. An experimental study of the factors of maturation and practice in the behavioral development of the embryo of the frog, *Rana pipiens*—A. FROMME
4. The Fels child behavior scales—T. W. RICHARDS AND M. P. SIMONS
5. Measurement of the size of general English vocabulary through the elementary grades and high school—M. K. SMITH
6. Stereotypes in the field of musical eminence—P. R. FARNSWORTH

VOLUME 25—January-June, 1942

1. A study of factors determining family size in a selected professional group—J. C. FLANAGAN
2. A genetic study of geometrical-optical illusions—A. WALTERS
3. Interpretation of behavior-ratings in terms of favorable and unfavorable deviations: A study of scores from the Read-Conrad Behavior Inventory—K. H. READ AND H. S. CONRAD
4. Are there any innate behavior tendencies?—J. B. SCHOELLAND
5. An investigation of the intelligibility of the speech of the deaf—C. V. HUDGINS AND F. C. NUMBERS

Genetic Psychology Monographs (continued)

VOLUME 26—July-December, 1942

1. The critical frequency limen for visual flicker in children between the ages of 6 and 18—V. L. MULLER
Some factors determining handedness in the white rat—K. L. WENTWORTH
2. Motivation and behavior—E. FERNKEL-BRUNSWIK

VOLUME 27—January-June, 1943

1. Comparison of children's personality traits, attitudes, and intelligence with parental occupation—N. R. MADDY
2. A comparative study of mental functioning patterns of problem and non-problem children seven, eight, and nine years of age—M. L. PIGNATELLI

VOLUME 28—July-December, 1943

1. Separation anxiety in young children: A study of hospital cases—H. EDLSTON
2. Correlates of vocational preferences—W. A. BRADLEY, JR.

VOLUME 29—January-June, 1944

1. Mental changes after bilateral prefrontal lobotomy—S. D. PORTER AND R. D. KEPNER
2. A twin-controlled experiment on the learning of auxiliary languages—B. PRICE, W. J. KOSTER, AND W. M. TAYLOR

VOLUME 30—July-December, 1944

1. A method of administering and evaluating the thematic appreciation test in group situations—R. M. CLARK
2. A study of anxiety reactions in young children by means of a projective technique—R. TEMPLE AND E. W. AMEN

VOLUME 31—January-June, 1945

1. The evolution of intelligent behavior in rhesus monkeys—B. WEINSTEIN
2. Perceptual behavior of brain-injured, mentally defective children: An experimental study by means of the Rorschach technique—H. WERNER

VOLUME 32—July-December, 1945

1. A clinical study of sentiments: I.—H. A. MURRAY AND C. D. MORGAN
2. A clinical study of sentiments: II.—H. A. MURRAY AND C. D. MORGAN

VOLUME 33—January-June, 1946

1. Interpretation of spontaneous drawings and paintings—T. S. WARNER
Preferences for sex symbols and their personality correlates—K. FRANCK
2. Outstanding traits: In a selected college group, with some reference to career interests and war records—F. L. WELLS AND W. L. WOODS

VOLUME 34—July-December, 1946

1. The relation of emotional adjustment to intellectual function—J. L. DESPERT AND H. O. PIERCE
The smiling response: A contribution to the ontogenesis of social relations—R. A. SPITZ
2. Finger-painting and personality diagnosis—P. J. NAPOLI

VOLUME 35—January-June, 1947

1. The thematic apperception technique in the study of culture-personality relations—W. E. HENRY
2. A continuation study of anxiety reactions in young children by means of a projective technique—M. DONKEY AND E. W. AMEN

A study of the vocational interest trends of secondary school and college women—A. M. CAWLEY

VOLUME 36—July-December, 1947

1. Maze test validation and psychosurgery—S. D. PORTER AND H. N. PETERS
2. The diagnostic implications of Rorschach's test in case studies of mental defectives—I. JOLLES

VOLUME 37—January-June, 1948

1. The radio day time serial: A symbolic analysis—W. L. WARNER AND W. E. HENRY
The relation of personality characteristics and response to verbal approval in a learning task—G. L. GRACE
2. The mechanism of vision: XVIII. Effects of destroying the visual "associative areas" of the monkey—K. S. LASHLEY
A study of the relationship between handwriting and personality variables—P. CASTELNUOVA-TEDESCO

VOLUME 38—July-December, 1948

1. Modern language learning: The intensive course as sponsored by the United States Army, and implications for the undergraduate course of study—M. LIND
Conflict: A study of some interactions between appetite and aversion in the white rat—M. A. TOLCOTT
2. Schizophrenia and the MAPS test: A study of certain formal psycho-social aspects of fantasy production in schizophrenia as revealed by performance on the Make a Picture Story (MAPS) Test—E. S. SHNEIDMAN
A study of the transmission of authority patterns in the family—H. L. INGERSOLL

VOLUME 39—January-June, 1949

1. A study of the psychoanalytic theory of psychosexual development—G. S. BLUM
The assessment of parental attitudes in relation to child adjustment—E. J. SHOLEN, JR.
2. Qualitative differences in the vocabulary responses of normals and abnormals—H. FEIFEL
The relative effectiveness of motion and still pictures as stimuli for eliciting fantasy stories about adolescent-parent relationships—P. E. EISENER
The organization of hereditary maze-brightness and maze-dullness—L. V. SEARLE

VOLUME 40—July-December, 1949

1. An experimental study of what young school children expect from their teachers—B. BIBER AND C. LEWIS
A study of the relative effects of age and of test difficulty upon factor patterns—H. A. CURTIS
A projective experiment using incomplete stories with multiple choice endings—J. K. SEATON
2. Effects of sex role and social status on the early adolescent personality—E. MILNER
Social perceptions and attitudes of children—M. RADKE, H. TRACER, AND H. DAVIS

VOLUME 41—January-June, 1950

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VOLUME 42—July-December, 1950

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Sex-role identification in young children in two diverse social groups—M. RABHAN
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VOLUME 43—January-June, 1951

1. A study of copying ability in children—E. A. TOWNSEND
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VOLUME 44—July-December, 1951

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VOLUME 45—January-June, 1952

1. Japanese-American personality and acculturation—W. CAUDILL
2. A statistical study of the Freudian theory of levels of psychosexual development—C. A. BARNES
Personality characteristics of selected disability groups—D. N. WIENER

Genetic Psychology Monographs (continued)

VOLUME 46—July-December, 1952

1. The relationship of social status, intelligence, and sex of ten- and eleven-year-old children to an awareness of poverty—F. J. ESTYAN
2. An empirical study of the castration and Oedipus complexes—S. M. FRIEDMAN
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VOLUME 47—January-June, 1953

1. Ability and accomplishment of persons earlier judged mentally deficient—D. C. CHARLES
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3. Some child-rearing antecedents of aggression and dependency in young children—R. R. SEARS, et al.
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VOLUME 48—July-December, 1953

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VOLUME 49—January-June, 1954

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VOLUME 50—July-December, 1954

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6. Measuring personality in developmental terms: The Personal Preference Scale.—M. H. KROUT AND J. K. TABIN

VOLUME 51—January-June, 1955

1. Some relations between techniques of feeding and training during infancy and certain behavior in childhood—A. BERNSTEIN
2. The expression of personality in drawings and paintings—L. H. STEWART
3. Negative stereotypes concerning Americans among American-born children receiving various types of minority-group education—J. A. FISHMAN
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VOLUME 52—July-December, 1955

1. Some personality correlates of sex, sibling position, and sex of sibling among five- and six-year-old children—H. L. KOCH
2. A quantitative Rorschach assessment of maladjustment and rigidity in acculturating Japanese Americans—G. DeVOS
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5. A study in an aspect of concept formation, with subnormal, average, and superior adolescents—H. N. HOFFMAN
6. Traumatic avoidance learning: Acquisition and extinction in dogs deprived of normal peripheral autonomic function—L. C. WYNN AND R. L. SOLOMON

VOLUME 53—January-June, 1956

1. As the psychiatric aide sees his work and problems—F. L. WELLS, M. GREENBLATT, AND R. W. HYDE
2. An investigation of avoidance, anxiety, and escape behavior in human subjects as measured by action potentials in muscle—J. D. BROTHERS
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5. The attitude structure of the individual: A Q-study of the educational attitudes of professors and laymen—F. N. KERLINGER

VOLUME 54—July-December 1956

1. A study of personality differences between middle and lower class adolescents: The Scondi Test in culture-personality research—L. RAINWATER
2. The assessment of parental identification—S. W. GRAY AND R. KLAUS
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4. Tender-mindedness versus tough-mindedness in psychology: A reexamination—H. WINTHROP
5. A method for the comparison of groups: A study in thematic apperception—L. C. SCHAW AND W. E. HENRY

VOLUME 55—January-June, 1957

1. Academic performance and personality adjustments of highly intelligent college students—B. M. HONNALL
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5. The rôle of mass media and the effect of aggressive film content upon children's aggressive responses and identification choices—R. S. ALBERT
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VOLUME 56—July-December, 1957

1. Some stable response determinants of perception, thinking, and learning: A study based on the analysis of a single test—M. L. SIMMEL AND S. COUNTS
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VOLUME 57—January-June, 1958

1. Psychological and cultural problems in mental subnormality: A review of research—S. B. SARASON AND T. GLADWIN
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1. Emotional aspects of political behavior: The woman voter—E. M. BENNETT AND H. M. GOODWIN
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Genetic Psychology Monographs (continued)

VOLUME 59—January-June, 1959

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Self, role, and satisfaction—A. L. BROPHY

VOLUME 60—July-December, 1959

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A study of mother-child relationships in the emotional disorders of children—M. J. ROSENTHAL, M. FINKELSTEIN, E. NI, AND R. E. ROBERTSON
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Parental identification in young children—W. EMMERICH
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VOLUME 61—January-June, 1960

1. Identifying socially maladjusted school children—A. A. ADAMS
Social interaction in an interracial nursery school—H. W. STEVENSON AND N. G. STEVENSON, *et al.*
Interests of pre-adolescent boys and girls—M. AMATORA
Educational and sex differences in the organization of abilities in technical and academic students in Colombia, South America—J. F. FILIZOLA
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Longitudinal survey of child Rorschach responses: Younger subjects two to 10 years—L. B. AMES
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VOLUME 62—July-December, 1960

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Rorschach diagnosis by a systematic combining of content, thought process, and determinant scales—P. A. BOWER, R. TESTIN, AND A. ROBERTS
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VOLUME 63—January-June, 1961

1. Make a sentence test: An approach to objective scoring of sentence completions—E. F. BORCATT
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VOLUME 64—July-December, 1961

1. Coping patterns of preschool children in response to intelligence test demands—A. MORIARTY
Studies of individual and paired interactional problem-solving behavior of rats: II. Solitary and social controls—A. BARON AND R. A. LITTMAN
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VOLUME 65—January-June, 1962

1. A Rorschach study of the development of personality structure in white and Negro children in a Southeastern community—A. C. PRICE
Measuring personality patterns of women—J. LOEVINGER
Home interests in early adolescence—M. AMATORA
Social and emotional adjustment during adolescence as related to the development of psychosomatic illness in adulthood—L. H. STEWART
2. A systematic study of interaction process scores, peer and self-assessments, personality and other variables—E. F. BORCATT
Children's conceptions of the content and functions of the human body—E. GELBERT

VOLUME 66—July-December, 1962

1. Ocular-manual laterality and perceptual rotation of literal symbols—I. FLEISCHER
Parental child-rearing attitudes and their correlates in adolescent hostility—S. B. CHOROST
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Achievement gains or losses during the academic year and over the summer vacation period: A study of trends in achievement by sex and grade level among students of average intelligence—K. M. PARSLEY, JR., AND M. POWELL

VOLUME 67—January-June, 1963

1. Verbatim dialogue of a mother and child in therapy—C. E. MOUSTAKAS
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2. Conceptual preferences associated with choice of quantitative and nonquantitative college majors—J. GILBERT
A study of the concept of the feminine role of 51 middle-class American families—A. STEINMANN

VOLUME 68—July-December, 1963

1. Brain dynamism as reflected in illusions—G. K. YACOVYNSKI
The nature and measurement of components of motivation—R. B. CATTELL, J. A. RADCLIFFE, AND A. B. SWENY
Sharing in preschool children as a function of amount and type of reinforcement—W. F. FISCHER
2. The Gesell Incomplete Man Test as a measure of developmental status—L. B. AMES AND F. L. ILG
Psychological and sociological factors in prediction of career patterns of women—M. C. MCLVEY
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(Manuscripts are printed in the order of final acceptance)

The effect of ethnic and social class variables on semantic differential performances	3
BY FLORENCE L. DENMARK, ETHEL J. SHIRK, AND ROBERT T. RILEY	
Effect of reinforcement magnitude on nonconformity	11
BY FRANK SISTRUNK, DAVID E. CLEMENT, AND JEROME D. ULMAN	
Interpersonal performance and placement interview decisions	23
BY RALPH BAROCAS AND FORREST L. VANCE	
The interaction of leadership, personality, and decisional environment	29
BY JAMES W. DYSON, DANIEL W. FLEITAS, AND FRANK P. SCIOLI, JR.	
Cognitive complexity and group performance	35
BY TERENCE R. MITCHELL	
Conformity influence in small groups: A probabilistic measure	45
BY ROBERT E. WHIT AND SUBRATA K. SEN	

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A typological assessment of "A Study of Values" by Q-methodology . . .	55
By LEONARD V. GORDON	
Differential cognitive dissonance and decision latency	69
By FLORENCE L. DENMARK AND BRUNHILDE RITTER	
Quantitative information differences between object-person presentation methods	75
By J. EDWIN BOYD AND RAYMOND P. PERRY	
The effects of source identification on attitude change as a function of the type of communication	81
By HOMER H. JOHNSON AND RICHARD R. IZZETT	
Four-person group concept attainment as a function of interaction format	89
By RICHARD P. MCGLYNN	
Communicating impressions of people: A methodological study of person perception	95
By RAYMOND P. PERRY AND J. EDWIN BOYD	
The effects of connotative meaning on the learning of names	101
By JAMES L. BRUNING	
Exposure to others, need for social approval, and reactions to agreement and disagreement from others	111
By STEPHEN C. JONES AND RONNA TAGER	
Development and validation of the Life Style Questionnaire	121
By MICHAEL P. NICHOLS, THOMAS P. GORDON, AND MURRAY D. LEVINE	
Consistency among attitudes, beliefs, and behavior	127
By WILLIAM H. BRUVOLD	
Help-seeking behavior in a task-oriented dyadic interaction	135
By SHELDON COTLER AND ROBERT F. QUILTY	
CROSS-CULTURAL NOTES	
The effect of race and similar attitudes on interpersonal attraction among white Rhodesians	143
By CHRISTOPHER ORPEN	
A comparison between the moral codes of American, Korean, and a group of Afrikaans-speaking South African students	147
By HENNING G. VILJOEN AND ELISE GROBLER	
REPLICATIONS AND REFINEMENTS	
Dogmatism and prejudice in white South Africa	151
By CHRISTOPHER ORPEN AND QUENTIN ROOKLEDGE	
Effect of the magnitude of reward upon cooperative game behavior	155
By DANIEL L. SCINTO, FRANK SISTRUNK, AND DAVID E. CLEMENT	
CURRENT PROBLEMS AND RESOLUTIONS	
The lack of sex differences in the moral judgments of preadolescents	157
By CHARLES BLAKE KEASEY	
Name and group identification	159
By TAI S. KANG	
The development of some factored scales of general beliefs	161
By RICHARD W. COAN, RICHARD W. HANSON, AND ZIPPORAH P. DOBYNS	
BOOKS RECENTLY RECEIVED	163

THE EFFECT OF ETHNIC AND SOCIAL CLASS
VARIABLES ON SEMANTIC DIFFERENTIAL
PERFORMANCE*¹

*Hunter College of the City University of New York, Pace College,
and Harvard University*

FLORENCE L. DENMARK, ETHEL J. SHIRK, AND ROBERT T. RILEY

A. INTRODUCTION

The Semantic Differential (5) is a test that was initially concerned with the measurement of meaning, whose function was later extended to the measurement of attitudes. Among the many adjective pairs considered by Osgood *et al.*, the following adjectives were reported to load on the Evaluative Dimension: valuable-worthless, interesting-dull, sad-happy, poor-rich, good-bad, pleasant-unpleasant. On the Potency Dimension we find these pairs: strong-weak, rough-smooth, broad-narrow, shallow-deep, soft-hard, light-heavy. The Activity Dimension includes active-passive, slow-fast, dull-sharp, hot-cold.

Osgood *et al.* indicate that the loadings on each factor should be constant over time and for all subjects. They also state that the Evaluative factor should always have the largest latent root (i.e., account for the most variance), and that the loadings on each factor should be constant over time and for all cultures, which would make comparison of concepts in the semantic space possible for different groups.

The Semantic Differential was conceived as a means of refuting the Whorf-Sapir hypothesis (7). This hypothesis specifies that language is a main determinant of thought patterns and perceptions of a given culture. Moreover, since language varies from culture to culture, thought patterns and perceptual style will also differ. Therefore, if the factor structure of the Semantic Differential is diverse for different groups in the population, this would refute universality, and in that sense support for the Whorf-Sapir hypothesis.

Some investigations have supported the Osgood concept of cross-cultural semantic constancy using different national and linguistic groups (3, 4, 6).

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However, data from a small pilot study (1) did indicate that the Osgood assumption of universality might not hold for different ethnic groups. This larger study was instituted to determine more clearly whether attitude scales standardized on a white population falter when applied to black subjects.

B. METHOD

1. Subjects

The sample consisted of 656 freshman students from various colleges in New York City divided into three subgroups: white middle class, black middle class, and black lower class. Class was determined primarily by economic factors: namely, ability to pay college tuition, as well as residence in state-designated poverty areas.

2. Procedure

Eight Semantic Differential scales were administered, six of which were related to the process of education: Studying, Learning, Lectures, Group Discussion, and College Graduate. The remaining two were related to self-perception: Real Self and Ideal Self. For each of the eight concepts, 12 adjective pairs from the 16 cited above, four each representative of Evaluation, Potency, and Activity, served as the seven-point rating scales. All adjectives chosen had high loadings on their respective factors as determined by Osgood. For each concept within each of three groups, separate factor analyses were performed, 24 altogether. A principal components method factoring the 12×12 matrix was employed with "termination criteria" satisfied once three factors were extracted. The unrotated factors were then rotated subject to the constraints of Kaiser's Varimax criteria. This rotation positions the rotated factors such that the rotation approximates Thurstone's "simple structure." The rotated factors for each concept within each group serve as the unit of analysis for comparison purposes.

Comparisons were made of the factor structures among the subject groups and for each of these groups with Osgood's loadings. Osgood *et al.*, when constructing their set of "typical" adjective loadings, pooled adjective pairs across concepts to reduce within concept variation. We have done the same for these comparisons. Because of the different factoring methods employed (Osgood *et al.*-centroid, and our principal components methods) only simple comparisons were made. The number of times a given adjective pair loaded highest on a factor other than the one specified by Osgood was calculated for each group.

C. RESULTS AND DISCUSSION

1. *Comparison with Osgood's Findings*

The middle-class whites most closely resembled Osgood's loadings, since 12 of the 16 adjective pairs loaded on the same factors. However, middle-class blacks differed on seven, and lower-class blacks on eight adjective pairs. When all three groups were pooled, only four out of 16 pairs loaded on the factors Osgood would predict. In addition, two adjective pairs (shallow-deep and active-passive) loaded highest for all three groups on factors other than the one specified by Osgood. (However, these pairs are not the most stable adjectives.)

2. *Constraints of the Semantic Space*

In all comparisons for all concepts, the three factors (Evaluation, Potency, and Activity) constrained the semantic space more for lower- and middle-class blacks than for whites (Table 1). The three factors explained variance for the black groups on *all* concepts, but in some cases, differences among concepts were larger than the between-group differences. In terms of the concepts, Group Discussion was the most constrained.

Only minor differences existed between the two black groups except for

TABLE 1
PERCENT OF VARIANCE EXPLAINED BY OSGOOD'S EVALUATIVE, POTENCY
AND ACTIVITY FACTORS

Scales	Lower-class blacks		Middle-class blacks		Middle-class whites	
	Sum of latent roots	% of variance explained*	Sum of latent roots	% of variance explained	Sum of latent roots	% of variance explained
Studying	6.60	55.0	7.32	61.0	6.05	50.4
Learning	6.87	57.2	7.22	60.1	6.08	50.6
Lectures	7.83	65.2	8.02	66.4	6.95	57.9
Ideal Me	6.30	52.5	7.16	59.6	6.24	52.0
Real Me	6.90	57.5	6.59	54.9	6.28	52.3
Student	7.46	62.2	7.57	63.0	7.02	58.4
Group discussion	7.94	66.1	8.14	67.8	7.73	64.4
College graduate	7.56	63.0	7.59	63.2	8.74	56.1

* The sum of the latent roots for each factor retained as a meaningful dimension of the correlation matrix, divided by the order of the correlation matrix indicates the success of the factor analysis. It estimates the percentage of variance explained by this set of factors for the correlation matrix.

Studying and Ideal Me. Here, the three factors accounted for 7% more variance in the lower-class black group than the middle-class black group.

3. Differentiation of the Semantic Space

In only two concepts, Ideal Me and Student, was there agreement for all S_s in the primary factor underlying the semantic space (Table 2). For ex-

TABLE 2
PERCENT OF COMMON VARIANCE ACCOUNTED FOR EACH FACTOR
BY CONCEPT AND GROUP

Scales	Lower-class blacks			Middle-class blacks			Middle-class whites		
	Eval- ua- tive	Po- tency	Ac- tiv- ity	Eval- ua- tive	Po- tency	Ac- tiv- ity	Eval- ua- tive	Po- tency	Ac- tiv- ity
Studying	33.7	36.5	29.8	27.1	30.1	42.8	33.4	27.6	39.0
Learning	41.5	32.9	25.6	47.0	30.8	22.2	35.8	27.1	37.1
Lectures	56.4	22.1	21.5	42.9	23.8	33.3	37.1	21.1	41.8
Ideal Me	43.3	31.3	25.4	43.2	22.9	33.9	49.6	16.9	36.7
Real Me	49.7	31.4	18.9	32.2	31.2	36.6	49.2	29.4	21.4
Student	40.8	34.0	25.2	43.5	28.3	28.2	46.2	21.1	32.7
Group discussion	50.1	17.6	32.3	28.7	26.4	44.8	44.2	36.4	19.4
College graduate	34.1	34.4	31.5	48.5	24.1	27.4	41.9	42.6	15.5

ample, for Ideal Me, about 43% of the common variance was accounted for by the Evaluation factor for the black groups, compared with nearly 50% for the white group.

On two additional concepts, Learning and Lectures, the two black groups manifested a factor space with the Evaluative factor having the greatest explanatory power, whereas the Activity dimension was the primary one for the middle-class whites.

Studying and College Graduate had the same factors primary for middle-class whites and blacks: i.e., Activity in the former and Evaluative in the latter. Potency was the dominant factor for both concepts for the lower-class blacks. Evaluation structured the semantic space of both whites and lower-class blacks in the case of Real Me and Group Discussion, compared with Activity for middle-class blacks.

These comparisons show the differences and similarities of concepts in the differentiation of factor spaces within groups. For lower-class blacks, the Evaluative factor tended to be primary, since it consistently accounted for more common variance; whereas, Activity played almost as important a role in semantic differentiation for middle-class blacks and whites.

Both in terms of constraints and differentiation, the black sample, especially lower-class blacks, appears different than whites. However, this does not imply equivalence between factor structures, even though similarities in differentiation and primacy occur at a general level. Equivalence would require that items load with the same magnitude on all factors for all items.

4. *Semantic Equivalence*

Harmon (2) presents several simple indices to assess the rough equivalence of factor solution for the same set of variables on different samples. Most of the indices of factor similarity suggested by Harmon resemble correlations between loadings on pairs of factors.

For factor solutions for each group to be equivalent or highly similar, the correlations between their respective factors should be significant. With loadings on 12 adjectives a correlation of .576 is needed for significance at the .05 level (10 *df*). This would be considered the minimal criterion of equivalence.

Correlations between factors and groups were computed within each of four concepts: Real Me, Ideal Me, Learning, and College Graduate. The self-concept measures were chosen because of their relevance to future academic success. Learning, in turn, is the means by which students succeed academically; and College Graduate is the state to which expectations develop and aspirations rise.

Equivalence among factor solutions of the groups is complete, when there are significant correlations on all three factors. If significant correlations occur only on selected factors, this implies that certain dimensions of the semantic space are similar, but not the entire space.

5. *Learning*

No significant correlations occurred for any factor or group. This was not surprising, since in terms of differentiation, the factors acted differently.

6. *Ideal Me*

The Evaluative and Activity factors for middle-class whites and blacks correlated highly ($>.815$), but Potency did not exhibit such a relationship. This is the best example of factorial similarity present among these concepts. For lower-class blacks, none of the factors correlated significantly with either middle-class group. Substantially, this finding suggests that the perception of an ideal self by middle-class blacks mirrors that of middle-class whites, rather than that of lower-class blacks, in terms of both Evaluation and Activity, but not in terms of Potency. Differences in Potency may suggest real dif-

ferences in expectations for future power, especially when one considers the current social status of these groups.

7. *Real Me*

Only Potency correlated significantly within this concept, and, once again, the correlation was between middle-class blacks and whites. The lack of correlation between black groups points to differences in the perception of their own power and control.

8. *College Graduate*

Evaluation correlated significantly for both black groups. Considering the adjectival components of the evaluative factor, this similarity may indicate that both black groups have the same expectations and aspirations for a college graduate.

The fact that the within concept factor correlations were for the most part not significant, raises questions about the "universality" claim of Osgood *et al.* (5). Second, when factorial similarity did occur, it was primarily between the middle-class groups, suggesting a class bias in the perceptions of concepts. Finally, even though the same factor has primacy in two semantic spaces, this does not imply similarity of the spaces, since the adjectives that load on the factor may have different meanings perhaps conditioned by group membership.

D. CONCLUSIONS

These findings suggest that the structure of the perceptions of concepts related to higher learning differs for blacks and whites, as well as for lower-class and middle-class blacks, and question the universality of Osgood's semantic space by suggesting that adjectival measures of the same factors vary across ethnic groups. The close resemblance of the white subjects' factor structure to the factor structure specified by Osgood suggests that there may be a white, middle-class bias to his set of factor loadings, which reveals differences in the structure of social perceptions and social values.

The possibility is raised that for certain ethnic groups either values must be changed to insure academic success, or perhaps the criteria for academic success must be re-evaluated. Academic motivation and achievement for diverse ethnic groups may require several approaches, taking into account differences in the perceptions of the processes of higher education.

E. SUMMARY

Eight Semantic Differential scales were administered to white middle-class students, as well as black middle- and lower-class students. Comparisons were made of the factor structures among each group of subjects and for each group with the loadings reported by Osgood. The white subjects' factor structure closely resembles that specified by Osgood. However, the differences in factor structure between the two groups of black subjects, as well as the differences between both of these groups and the white subjects, raised questions as to whether Osgood's semantic space can be applied to *all* groups.

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Box 124

Hunter College of the City University of New York

695 Park Avenue

New York, New York 10021

EFFECT OF REINFORCEMENT MAGNITUDE ON NONCONFORMITY*¹

University of South Florida

FRANK SISTRUNK, DAVID E. CLEMENT, AND JEROME D. ULMAN

A. INTRODUCTION

One of the oldest and most fruitful research problems of social psychology has been the study of conformity—the operation of social pressures on an individual's attitudes and behavior. Early theorists suggested that conformity was a trait or an aspect of a person's personality that is manifested in social situations. However, more recent analyses have conceived of conforming behavior as an instrumental response directed toward the attainment of functional goals (6, 34). Thus, it can be considered a kind of social operant, which should change in specifiable ways with changes in the characteristics of reinforcement. This study involved the effect of reinforcement magnitude on the acquisition and extinction of a change in conforming behavior.

As a social operant, conforming behavior should result from various motives under various experimental situations and occur after various behavioral histories (1, 4, 13, 18, 27, 31, 32). This idea is consistent with modern social theories of conformity, which have discarded the earlier idea of a unitary motivational basis for conformity (4, 13, 14, 18, 19, 30, 32). In addition, of course, conformity may be modified by reinforcement. Particularly well known are the studies of Kelman (12) and Mausner (17) where the behavior of *Ss* was reinforced prior to the conforming session. Kelman (12) modified suggestibility by means of social reinforcement and obtained results that were consistent with general principles of reinforcement. He demonstrated the importance of motivational and experiential factors in determining suggestibility. Mausner (17) manipulated the reinforcement history of the *S* through falsified feedback of the accuracy of judgments made by the *S* and produced meaningful differences in conformity. However, neither of these studies provided for direct manipulation of a conforming response during the conformity session, as Endler (6, 7) did later. He examined the effects of

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reinforcement and schedules of reinforcement on conformity, employing information as to the accuracy of the *S*'s response as a reinforcer. Endler produced differences in conformity, observed posttest behavior consistent with his reinforcement schedules, and interpreted his results in learning terms. Thus, both the Kelman and Mausner studies demonstrated that conformity can be affected by prior differential reinforcement of *S*'s behavior, and Endler added that the acquisition and extinction of conformity can be differentially affected by different schedules of feedback. In these studies, the magnitude of reinforcement was held constant.

There also have been studies using a social operant which have addressed the problem of magnitude of reinforcement, but these have been oriented primarily toward testing predictions made by dissonance theories. Such studies (e.g., 16, 26) generally have found a negative relation between reinforcement magnitude and resistance to extinction, though the latter rarely has been referred to by that term. Reviews by McGuire (20) and by Sears and Abeles (29) have discussed the theoretical explanations for this relation in some detail. McGuire (20) suggested that variable relations may be found depending upon the opportunity the *S* has to actually change his behavior. He hypothesized that if the *S* commits himself to a change, but does not have appreciable opportunity to carry out this changed behavior, then a dissonance effect holds, and a negative relation should be obtained between reinforcement magnitude and resistance to extinction. However, if the change is carried out by the *S* (the operational definition of amount of change is not specified), then the change would be effective (resistance to extinction, presumably) in direct relation to the reinforcement magnitude. Bem's behavioristic analysis (2) suggested treating each *S* as though he were observing his own behavior. Thus, the *S* who sees himself changing behavior for smaller reinforcement magnitude would be more likely to attribute the change to internal attitudinal factors and would maintain the change longer.

Behavioristic approaches with lower animals and other kinds of responses have been less concerned with such theoretical constructs as dissonance (though "frustration" is cited occasionally), but have failed to describe any more clearly the effect of reinforcement magnitude on resistance to extinction. Several investigators (e.g., 11, 15, 28, 33) have obtained decreasing resistance to extinction with increasing reinforcement magnitude. The majority of these studies have used running speeds of rats in a runway (straight alley) as the dependent variable. Gonzalez, Holmes, and Bitterman (9) replicated these results with rats performing a lever-pressing response, but found a positive

relation between reinforcement magnitude and resistance to extinction with goldfish. Waller (35) found resistance to extinction to be either a nonmonotonic or simple increasing function of reinforcement magnitude for rats in a spatial or brightness discrimination task, indicating that different dependent responses might lead to different relationships. Hill and Spear (10) argued just this point, that lever-pressing or other such responses would give a positive relation between reinforcement magnitude and resistance to extinction, while running speed would be influenced by different factors. Moreover, their results with rats in a runway failed to replicate previous studies, in that they obtained a positive relation between reinforcement magnitude and resistance to extinction. To complete the confusion as to the relation, at least one study (24) found no effect of reinforcement magnitude on resistance to extinction. Metzger, Cotton, and Lewis (21) suggested one problem which makes inferences from such studies difficult, that of level of performance at the end of acquisition training. They equated performance at the beginning of extinction by means of a covariance analysis, and failed to find any effect of reinforcement magnitude on resistance to extinction. Only a few studies concerned with reinforcement as a major variable (e.g., 25) have been run with human Ss, and the evidence seems to support the negative relation between reinforcement magnitude and resistance to extinction.

The present study investigated the effects of magnitude of reinforcement on the acquisition and extinction of a change in conforming behavior. Conforming behavior was produced within a Crutchfield-type apparatus (3) with the use of a two-choice judgmental task. An attempt was made to modify the preferred response of the S by the reinforcement of nonconforming responses during an acquisition phase, followed by an extinction phase. The independent variables were magnitude of reinforcement, treatment phase, and the sex of the S. The dependent variable was proportion conforming responses within blocks of trials.

B. METHOD

1. Subjects

Volunteer Ss were obtained from undergraduate students at the University of South Florida. Because the experimental task involved auditory discrimination, Ss with obvious hearing impairments were excluded from the study, as were Ss who failed other procedural or behavioral criteria (described in procedure). Forty-eight Ss, 24 males and 24 females, composed the final experimental groups.

2. Procedure

The experiment was divided into three phases. The first, a pretest phase, was used to select "high conformers" on the basis of their performance in a Crutchfield-type conformity situation. Those *Ss* meeting the criterion of 60% conformity on 15 critical trials were randomly assigned to one of three reinforcement magnitude groups for the second, or Reward, phase. The third phase was a series of extinction trials, with no monetary rewards contingent upon responses.

a. Conformity assessment. Measurements of conforming behavior were made within an artificial laboratory situation similar to that originally used by Crutchfield (3). The multichoice stimulus display apparatus (Lafayette Instrument Company) employed in the conformity situation afforded observation of five critical *Ss* simultaneously. It functioned as a mechanical and electrical communications system among *Ss* in a simulated group, with communication among *Ss* by means of electrical switches and lights. The apparatus allowed the five *Ss* to report their choice between two alternative responses for a series of auditory judgment tasks, and at the same time, it permitted *E* to introduce false information into the system, leading each *S* to believe that his four colleagues had reported judgments as indicated by the display of lights before him.

Subjects came to the experimental laboratory in groups of five. In no case were both male and female *Ss* members of the same five member group. Thus, the influencing majority for an *S* was always four peers of the same sex.

Upon arrival at the laboratory, *Ss* were conducted to the experimental room and asked to seat themselves in the five booths of the multichoice apparatus. Instructions delivered by tape recording informed each *S* that the *E* was interested in auditory discrimination made by individuals in a group situation, described the apparatus, and related the fact that each *S* was able not only to report his own judgment but would also be informed of the judgments expressed by the other members of the group. The *S* was directed to respond in alphabetical order and was told to open an envelope on the desk before him which would assign a code letter (A, B, C, D, or E) to identify him. Each envelope contained a card with the letter "E" on it, indicating to each *S* that the other four members had been assigned letters A, B, C, and D. After the judgmental task was described, two practice trials were presented as a check to determine whether all *Ss* understood the task. Subjects who on more than two occasions responded out of turn (i.e., before the simulated responses of the group were displayed on their panel), or who made both

alternative responses on the same trial, or who neglected to respond at all were eliminated from the study on the assumption that they were insufficiently engaged in the experimental task. On the basis of this elimination criterion, one female and one male *S* were dropped from the study.

b. Judgment task. The task was an adaptation of a procedure used previously in studies of social influence (18, 19, 23, 30), in which *Ss* were asked to make comparative judgments of auditory stimuli. The experimental task in the present study required judging which of the members of a pair of sequentially presented tones was longer in duration. Twenty-five pairs of tones were recorded from a square wave signal generator at 140 Hz. The durations of the tones ranged from three to six seconds, with a discrepancy between tones within pairs of less than .1 second. Included in the 25 trials were five filler trials (occurring irregularly within the series) in which reports made by the contrived majority were not unanimous, but split three to one in their judgments. The remaining 20 trials were critical conformity trials on which reports made by the contrived majority were unanimous. The same 25 recorded trials were presented to *S* three times during the course of the experiment, totaling 75 trials and requiring slightly less than an hour for the experimental session.

The judgmental task was empirically defined as indiscriminable in that the judgments made by pilot *Ss* selected to establish the level of task difficulty were completely unreliable in discriminating the longer member of the tone pairs throughout the entire series of 25 trials.

c. Pretest phase. Immediately following the initial instructions, *Ss* were presented with 25 judgmental trials, including five familiarization trials, then 15 critical conformity trials with five filler trials interspersed. *Ss* were classified as "high conformers" if they made a response that matched the contrived majority at least 60% of the time (nine times) on the 15 critical trials in this phase. Since this study involved an attempt to change the behavior of conformers, only those *Ss* who met the criterion for conformity during the pretest phase were assigned to one of the three reward conditions. Eight males and five females failed to achieve this conformity criterion.

d. Reward phase. The three reinforcement magnitude conditions were zero reward, low reward, and high reward. Subsequent to the Pretest phase, *Ss* in the zero reward condition were presented with another 25 conformity trials. Subjects in the low and high reward conditions were given further recorded instructions before they were presented with the reward trials. The instructions informed each *S* that he would receive a coin for each "correct" response, and that he would be allowed to keep all the money he earned in

the study. The *Ss* were not told that a "correct" response was a nonconforming response. Next, the *S*'s attention was directed to a green light on his panel that signaled the start and end of his Reward phase. The reward procedure, then, permitted individual feedback and money for each *S* on each reward trial when he made a nonconforming response.

When a nonconforming response was made by an *S* in the low or high reward condition during the Reward phase, he automatically received a coin (nickel for low reward and quarter for high reward). Electrically operated counters mounted in the *E*'s control unit recorded the number of responses made by each *S*. The criterion employed to define and limit the Reward phase specified that the *S* must complete 10 reinforced responses within 25 trials. For these *Ss* the number of trials included in the Reward phase varied, with a range of 10 to 25 trials depending upon the number of trials it took a particular *S* to meet the response criterion. Four *Ss* failed to meet this criterion. In addition to defining the reward treatment in terms of a constant number of reinforced responses, the criterion also produced a constant amount of total reward for each low reward *S* (\$.50) and each high reward *S* (\$2.50).

As soon as the *S* had completed 10 reinforced responses, the green light was turned on in his booth, informing him that his particular Reward phase had ended.

e. Extinction phase. The Extinction phase began for each *S* individually when he met the criterion for the Reward phase. The 25 trials in the Extinction phase were identical to those of the Pretest phase. That is, they were strictly conformity trials with no reward or feedback as to the "accuracy" of the response, other than the falsified feedback ostensibly from the other *Ss*. Hence, this phase was simply an additional 25 trials for *Ss* in the zero reward condition, and a true extinction phase for *Ss* in the low and high reward conditions.

C. RESULTS

The proportions of conforming responses were calculated for the three reward conditions in each of the three phases of the experiment. For each phase, the conformity score was the ratio of the number of conformity responses to the number of critical trials. In the Pretest phase there were 15 critical trials for each *S*. In the Reward phase the number of critical trials for *Ss* in the low and high reward conditions ranged from 10 to 20, with a mean of 12.8 critical trials; there were 20 critical trials for *Ss* in the zero reward condition. Two conformity measures were taken in the extinction phase: (a) the Extinction I conformity scores were based on the first block

of 10 critical trials following the reward phase, and (b) the Extinction II scores were based on the second block of 10 critical trials following the reward phase. Thus, while there were three experimental phases, the data were statistically analyzed on the basis of four phases, since the third phase was divided into two measures. This was done to better identify trends during extinction.

The data were submitted to an analysis of variance with reward on three levels and sex of *S* on two levels as between-*S* factors, and treatment phases (four measures) as a repeated measure. Reinforcement magnitude ($F_{2,42} = 11.91$), treatment phase ($F_{3,126} = 55.73$), and the interaction between reinforcement magnitude and treatment phase ($F_{6,126} = 12.55$) were significant at the .01 level. No other effects reached significance even at the .05 level. Figure 1 shows the mean conformity values for reinforcement magnitudes as a function of treatment phase (data pooled across sex of *S*).

As recommended by Winer (36) for proportion data, an analysis of variance was performed on the data after imposing an arcsine transformation ($Y = 2 \arcsin X$, where $X = \text{proportion}$). The results of the analysis were

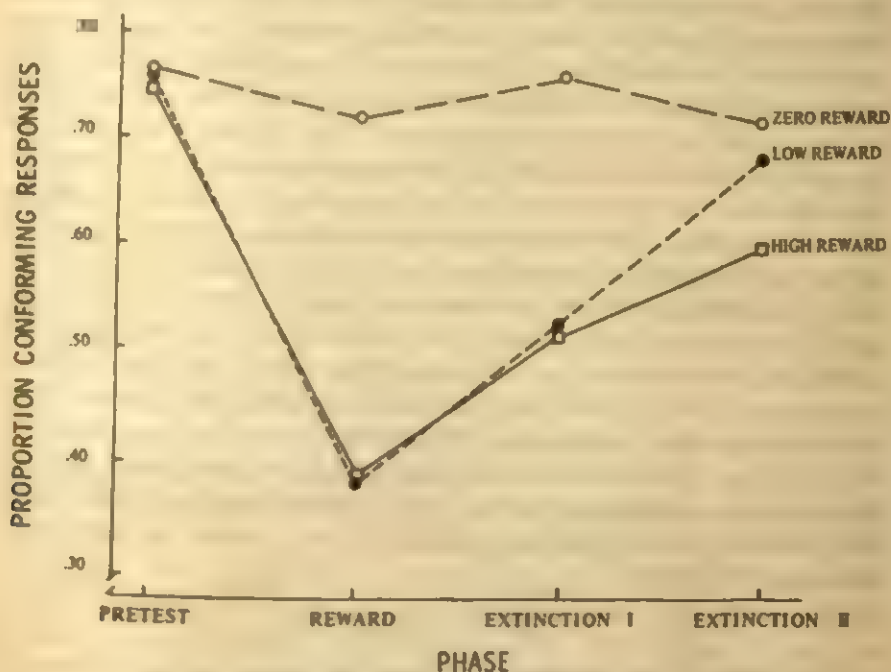


FIGURE 1
PROPORTION CONFORMING RESPONSES AS A FUNCTION OF
REINFORCEMENT MAGNITUDE AND PHASE

identical to those obtained from the proportion data. Also, as "filler trials" might not have been strictly neutral in effect, a separate set of conformity scores was obtained by measuring the proportion of conformity on *both* the critical and the filler trials combined. That is, regardless of whether or not the contrived majority was unanimous, responses made by the *S* that matched the majority were counted as conforming responses. The data were analyzed as before for both proportions and transformed scores, yielding the same results as previously obtained. Thus, the results were not an artifact of the particular way in which the dependent variable was measured.

Duncan's New Multiple Range Test (5) was used to test the differences among means for different levels of each of the three significant effects. All tests for significance were at the .05 level. There were no significant differences among the reinforcement magnitude conditions in the Pretest phase. Therefore, all *Ss* were conforming at about the same level during the initial testing. As shown in Figure 1, the low and high reward groups differed significantly from the zero reward group in the Reward phase but did not differ from each other. Both low and high reward groups differed significantly in the Reward phase from pretest conforming behavior, while the zero reward group did not change significantly during those phases (or for the matter, during any of the four phases). During Extinction I, both low and high reward *Ss* increased significantly in conforming behavior from the Reward phase, while remaining significantly below the conforming scores for the zero reward *Ss*. The high and low reward *Ss* did not differ during the Extinction I phase. The low reward *Ss* significantly increased in conforming behavior from Extinction I to Extinction II, not differing from the zero reward *Ss* in the latter phase. High reward *Ss* also increased significantly in conforming behavior from Extinction I to Extinction II, but were significantly below both the low reward and zero reward *Ss* in the latter phase. Thus, both high and low rewards were effective in reducing conforming behavior, and did not differ in this respect. After termination of rewards, both sets of *Ss* increased in conforming behavior, as might be expected for typical extinction data. However, the rate at which *Ss* returned toward pretest operant levels was different for the two levels of reinforcement, indicating faster extinction for lower reinforcement magnitude.

D. DISCUSSION

The first finding of importance concerned the behavior of the zero reward *Ss* who were under the same stimulus and reinforcement conditions over the entire series of trials. The behavior of this group, with no significant change

during the experiment, served as an effective and stable reference or control from which to assess the effects of the two nonzero reinforcement magnitudes.

For the two nonzero reinforcement magnitudes, the reward phase was marked by a dramatic reduction in conforming behavior relative to the continued high conformity of the zero reward *Ss*. The degree of conformity was easily modified by reinforcement for nonconformity. However, there was no significant difference in this modification between the low reward and high reward conditions. Note that the mean proportion conformity scores for the two conditions were almost identical in the Reward phase (high reward = .363, low reward = .366). Thus the difference between 5¢ and 25¢ reward was not sufficient to produce differences in acquisition of nonconforming responses. Perhaps this should not have been surprising in view of the results found by Miller and Estes (22) and Estes, Miller, and Curtin (8) in experiments investigating the effects of amount of monetary reward on human performance in a discrimination task. Even with a reward ratio of 50:1 (50¢ and 1¢ rewards), the difference in the amount of reward failed to produce differences in performance in the discrimination task. Miller and Estes suggested that knowledge of the results might have provided a basic incentive level sufficient to mask the differential effects of the two reward levels. The same kind of masking may have been operating in the present study during acquisition (Reward phase).

Both low and high reward groups showed a significant change in their behavior from Reward to Extinction I, and also from Extinction I to Extinction II. The *Ss* were returning more and more to their original operant level of conforming behavior. The behavioral change was not precipitous, but was gradual and orderly as would be expected in an extinction function. The data at this point are particularly supportive of an operant conditioning interpretation as opposed to an explanation in terms of traditional social influence, social comparison, or problem solving theories. That is, theories depending on assumptions that the *S* is yielding to an influence, or is comparing his behavior to social reality, or is trying to figure out how to solve the problem with which the *E* has confronted him would all predict a more abrupt change in behavior in the extinction phases. For example, if the *S* had assumed that when the *E* stopped providing information, he was supposed to respond in terms of the information supplied by the other *Ss*, he would have changed his response strategy rapidly. Alternatively, if he were yielding to influence from peers and then yielding to influence from the *E*, in extinction he should have returned rapidly to yielding to the pressures of his peers. If he were comparing his behavior to the social reality of the responses of the other *Ss* and

then had turned to the newly established physical reality from the *E* in the Reward phase, then in the third phase he would have returned to the social reality provided by the other *Ss*. In other words, any of these kinds of social judgment theories would predict either no change or rapid change of behavior consistent with the rapid change in the environmental conditions. Perhaps, in *post hoc* description, these theories could posit residual influences or conflict between present and remembered stimuli, but this would appear to be straining the theories in their present form.

In addition, the greater resistance to extinction with increased reinforcement magnitude is inconsistent with predictions made by dissonance theories. To be sure, McGuire (20) has suggested that increasing magnitude of reinforcement would lead to increased resistance to extinction, and this would be as a result of opportunity for the *S* actually to change his responses. Such opportunity certainly existed in this study, but the lack of specificity concerning *how much* opportunity is to be defined as "opportunity" leads unavoidably to the conclusion that, at the present stage of research, treating conforming responses as social operants subject to conditioning procedures is more justifiable and more parsimonious than positing some kind of dissonance operation.

Although the results were not definitive regarding the relation between reinforcement magnitude and resistance to extinction, they were informative in this regard. By good fortune, the level of performance in the Reward phase was the same for both low and high reward groups, so that differences at that point could not have been responsible for the extinction differences. This circumvented the objection that Metzger, Cotton, and Lewis (21) raised to previous studies which confounded acquisition level with reinforcement magnitude effects. The positive relation obtained here is in agreement with that found by some other investigators using discrimination tasks (e.g., 35) and thus lends more support to the argument of Hill and Spear (10) that such tasks differ fundamentally from runway performance (e.g., 11, 33). Since most human performance tasks are complex and involve discriminative responses, the data on nonhuman *Ss* performing on discrimination tasks may be relevant and appropriate to generalizations to human operant behavior. Those data on nonhuman runway performance may be inappropriate for such generalization. Future investigators should be sensitive to the tenuous nature of the previous nonhuman data with regard to human performance, and should include appropriate control groups to allow specification of the effects of reinforcement magnitude. It is indeed unfortunate that prior studies of the effects of reinforcement magnitude with human *Ss* (e.g., 16, 25, 26) are sparse and inconclusive. At any rate, for the rather small monetary rewards in this experi-

ment, increasing reinforcement magnitude led to increasing resistance to extinction with human Ss.

In summary, conforming behavior is a social operant which may be manipulated by reinforcement like any other instrumental response. With the use of modest magnitudes of monetary reinforcement, changes in the level of this behavior are more resistant to extinction as reinforcement magnitude is increased.

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State University System of Florida
 107 W. Gaines Street
 Tallahassee, Florida 32304

INTERPERSONAL PERFORMANCE AND PLACEMENT INTERVIEW DECISIONS*¹

University of Rochester

RALPH BAROCAS AND FORREST L. VANCE

A. INTRODUCTION AND PROBLEM

Accurate person perception is repeatedly identified as an essential component of effectiveness in the research literature concerned with interpersonal functioning. The importance of such accuracy is a basic assumption in the training of mental health workers; it is the central doctrine of sensitivity training; and has received wide attention in the research literature on interpersonal strategies.

In the person-perception literature, a common research strategy seeks to assess accuracy of perception by presentation of a standard social stimulus with the requirement that the *S* correctly label or predict some attribute or state of that stimulus. A wide variety of stimuli have been studied in this way, including posed photographs (16), candid photographs (13), line-drawings (3), programmed case reports (6), audio tape recordings (11), trait descriptions (1), ratings of "real" people (17), postural line drawings (15), and films (4).

This approach sacrifices natural interaction to achieve rigorous control of independent variables. The resulting focus on the accurate reception of social cues usually ignores the effect of the information on the *competent transmission* of social cues, although both reception and transmission of cues are critical factors in any set of interpersonal transactions, and especially so for those that involve strong motivation toward specific goals.

On the other hand, in the literature on interpersonal strategies, or the management of one's appearance for gain, accuracy of perception is ignored and the transmission of social cues is emphasized (2, 5, 7, 8, 9, 10, 12, 14). Also, the empirical studies in this area have been more successful in the clarification of the tactics of influence.

As a remedy for these concerns, a situation is required in which the subject is motivated to evaluate received social cues and also to communicate

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social cues effectively. The employment interview is a real-life situation that satisfies these requirements.

With reasonable certainty, the employment interviewer and a job candidate share the purpose of the interaction. They are committed to deliberate evaluation of each other, and a mutually careful presentation of self. The candidate appears voluntarily and presents himself as a desirable prospect to maximize his options by obtaining an employment offer. The interviewer makes at least a tentative decision in the course of interview as to whether or not the candidate is suitable, and then either "turns him off" or recruits actively. The candidate has similar options, but obviously he can accept the position only if offered. Motivational levels for accurate cue encoding and transmission are high for both persons. It is potentially "bread and butter" for the candidate and it is the livelihood of the interviewer.

Exploiting the naturalistic setting, this study examines three hypotheses relevant to interpersonal transactions in the placement interview. They are (a) candidates who accurately estimate the interviewers' impressions will be rated more highly with respect to the way they managed their behavior during the interview, (b) these same persons will also be rated by interviewers as better employment prospects, and, finally, (c) both interviewers and candidates hold a common view of the salient factors in the evaluation process.

B. METHOD

1. Subjects

The Ss were 77 university students receiving terminal degrees in a variety of disciplines. The Ss were interviewed by industrial recruiters at the University Placement Center. Thirty-minute interviews were conducted by 18 different interviewers over a period of five days.

2. Procedures

Recruiters were met prior to the first scheduled interview of each day by administrative heads of the placement center and were informed that an evaluation of the university placement process was in progress that required their cooperation. Recruiters were then provided with a form entitled *The Placement Interview Evaluation Inventory, Form R (PIEI-R)*,² with instructions to complete these materials for each candidate evaluated on that day. The inventory was composed of two parts.

² Complete copies of all rating scales used may be obtained upon request from the authors.

Part I consisted of six five-step rating scales, of which two defined the interview outcome criteria for this study. The criterion ratings were (a) a rating of probability that the candidate would be accepted for employment if he completed the application, and (b) a rating of suitability for the position.

Part II of the inventory was composed of nine seven-step rating scales of the candidates' interpersonal performance during the interview. These scales tapped the following behavioral dimensions: tenseness during interview, openness, natural *versus* forced appearance, opportunity for evaluation, suspiciousness, warmth, sincerity, shrewdness, and honesty.

The candidates were also greeted by the placement center receptionist with the statement that an evaluation of the university placement process was in progress. They were then provided with a *Pre-Interview Form* (PIF). At that time, the subject was also asked to remain after the interview to complete an *Interview Evaluation Inventory*.

The Pre-Interview form was a measure of motivation. It required the candidate to assess the probability of his being accepted for the position and, second, to indicate on a five-step scale how much he wanted this particular position.

The candidate's Interview Evaluation inventory had three parts: Part I was a postinterview counterpart of the motivation items plus items akin to Part I of the recruiter's interview form; Part II was composed of rating scales *parallel* to Part II of the recruiter's inventory; Part III was a *copy* of Part II of the recruiter's inventory and was accompanied by instructions to predict the interviewer's rating. These latter scores were used to calculate discrepancy scores that reflected accuracy of candidate perception. An *accuracy score* was defined as the total discrepancy between the candidate's predictions and the recruiter's actual ratings of interview performance. The smaller the score the greater the accuracy.

C. RESULTS

The obtained Pearson product moment correlation coefficient (r) of $-.280$ ($p < .05$) between the discrepancy score and rated interview performance lends some support to the hypothesis that candidates who accurately estimate the interviewers' impressions are identified by the recruiters as managing their interview behavior well.

The correlations between accuracy and probability of acceptance by employer and between accuracy and rated employment suitability were, respectively, $.030$ and $-.040$, failing to support the second hypothesis. However, the two outcome measures were significantly associated with interviewers'

perceptions that candidates allow a fair opportunity for evaluation (again respectively, .358 and .327), suggesting that personal attributes that facilitate perceived opportunity for fair evaluation are critical elements in successful placement interviews.

The belief that the interviewer and candidate have a common view of the evaluation process was then evaluated by inspection of the pattern of correlations between perceived openness to evaluation and interpersonal performance ratings. These data are summarized in Table 1. A comparison of these

TABLE 1
CORRELATIONS BETWEEN EVALUATION OPPORTUNITY AND INTERVIEW PERFORMANCE
FOR RECRUITERS AND CANDIDATES^a

Variable	Recruiters	Candidates
Coldness	-.541*	-.592*
Trust	.434*	.341*
Openness	.417*	.266*
Conning	-.394*	-.111
Insincerity	-.369*	-.301*
Tension	-.334*	.049
Shrewdness	.181	.101
Naturalness	-.155	.143

^a Correlations based on 77 interviews with 77 candidates conducted by 18 recruiters during a five-day period.

* $p < .05$.

relationships for candidates with those for recruiters reveals substantial consensus on the components of evaluation opportunity.

D. DISCUSSION

Under the conditions of this study, accurate appraisal of interview performance by candidates failed to predict the likelihood of a job offer. It seems that the interviewer's skills contribute to this outcome. His role requires that he assess as many candidates as possible to broaden his selection base. He then seeks to leave them with positive feelings and no firm commitment of a job opportunity. If the interviewer is successful, he will not have communicated the true job acceptance probabilities. These observations do not suggest that rated interview performance is unimportant. In fact, it is one of the most important predictors when one has access to job specifications and company requirements as does the recruiter. His ratings of interview performance correlate .451 ($p < .01$) with job acceptance probabilities and .512 ($p < .01$) with ratings of candidate suitability.

What is clear for both recruiters and candidates is that evaluation op-

portunity is critical for the successful interview. Both interview participants agree that a relaxed, trusting, warm, and sincere appearance contribute to evaluation opportunity which, in turn, contributes to rated interview performance. The recruiters' ratings of opportunity to evaluate the candidate correlated .358 ($p < .05$) with job acceptance probability and .327 ($p < .05$) with candidate suitability.

Other aspects of the interview context would serve to modify the relevance of accuracy of social perception to job offer probability. Examples include the particular technical skills of the candidate, and the characteristics of supply and demand for those skills in the current employment market. A candidate in an area where there is great demand coupled with unusual technical requirements—e.g., optics—must impress the interviewer with technical capability rather than interpersonal sophistication. This is in contrast, for example, to a liberal arts graduate applying for a management training program where the opposite relationship might be anticipated. A fairer test of the hypothesis, then, would be to examine the relationship between accuracy of prediction and job probability outcome for *nontechnical* positions. This would then take into account the characteristics of the role that the candidate is seeking to occupy and, consequently, cause the interview to approximate more closely a work sample of the job requirements.

E. SUMMARY

A group of industrial recruiters ($N = 18$) and a group of employment candidates ($N = 77$) served as *Ss* in a study of the effects of person perception skills on ratings of interview performance and candidate suitability. The results indicate that accurate estimates of one's appearance in an employment interview were related to interview performance but not to probability of employment. Furthermore, the results indicate that relaxed open communication, or its appearance, is required for the best possible appraisal for interviewer and candidate. Finally, both the employment market and the particular occupational role might influence the relationship between accuracy of perception and job acceptance probability.

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Department of Psychology
 The University of Rochester
 River Campus Station
 Rochester, New York 14627

THE INTERACTION OF LEADERSHIP, PERSONALITY, AND DECISIONAL ENVIRONMENTS*

*Political Research Institute, Florida State University; Political Science Department,
University of North Carolina at Charlotte; and University of Illinois
at Chicago Circle*

JAMES W. DYSON, DANIEL W. FLEITAS, AND FRANK P. SCIOLI, JR.

A. INTRODUCTION

In the past, reviews of the large body of small-group research on leadership have reported that investigations of the relationship between personality traits and leadership behavior have failed to reveal any consistent patterns of traits that characterize leaders (7). What has been discovered, however, is the importance of situational factors in determining whether an individual will perform leadership functions, and if he then will be perceived as a leader by the other members of a problem-solving group (2, 3, 5, 6).

If leadership is a function of both situational factors and personality characteristics, it seems more beneficial to digress from a sole concern with the traits of leaders to a wider consideration of the complex interactions of leadership behavior, personality, and the situation. This paper reports the findings of an experimental investigation of the relationship of personality factors to leadership emergence in two different small-group decisional contexts. There were two hypotheses tested. First, there will be a congruence between different kinds of leadership roles in small-group problem-solving situations. Second, differences by personality types that distinguish leaders will vary in different types of decisional situations.

B. METHOD

1. *Subjects*

The subjects for the experiment were 56 male and 35 female volunteers drawn from a number of different classes in the schools of Business, Social Welfare, and Arts and Sciences at Florida State University during the spring of 1969. They were selected on the basis of their scores on a 20-item questionnaire containing 11 statements selected from Gough's Dominance Scale (4) and nine statements taken from the Dogmatism Scale developed by Rokeach

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(8). The intent was to obtain a pool of participants heterogeneous as to the above two personality traits. That is, subjects were selected on the basis of their locations all along the continua. Each participant was placed into one group designed to reflect heterogeneity on the personality traits.

2. Procedure

The basic format of each experimental session consisted of placing a small group of three, four, or five Ss in a large seminar room. Thus each subject was placed in only one group. The Ss were instructed to read a problem placed on the table before them. The problem called for a decision to be arrived at within a specified period of time (15 to 20 minutes). Also, on the table was a decision form. For 15 of the groups both a Group Decision Form and Individual Decision Forms were provided. Thus, group members were made aware that they might feel free to dissent. But for seven other sessions, only the Group Decision Form was available. While no specific instructions were given the participants in these latter groups as to the necessity of arriving at a single group decision, this impression was deliberately created by designating several places at the bottom of the form where each individual was to sign his agreement with the decision. The use of these two procedures permitted the investigation of leadership emergence under conditions of nonconformity decision-making environments (where members are free to dissent) and under conditions exerting strong pressures for conformity.

Since we deduced that the personality traits of leaders would be more varied in the nonconformity than the conformity situation, more groups were exposed to the nonconformity treatment. Subsequently, the decision was made to assign members to groups randomly and expose every third group to the conformity treatment. Thus, of the 22 groups, seven were exposed to the conformity treatment.

Three types of questions or issues were presented, two of a political nature and one that was at least nominally nonpolitical. Of the political problems, one concerned the size of the Federal Government budget (should it be increased, decreased, or remain the same?), while the other involved the issue of elected *versus* appointed judges. The nonpolitical problem called for a decision on the allocation of student-assistantship funds between three students in a situation where the funds were insufficient to meet the needs of all three students.

Each group session was videotaped by a small camera placed on a tripod at one end of the seminar room. A shotgun microphone was located to one side of the group to record the verbal interactions. No attempt was made to

conceal the apparatus. Instead, emphasis was placed on arranging the camera, microphone, and assorted wires as inconspicuously as possible. It should be added that no special lights were necessary, and no sounds emitted from the apparatus. In fact, there was no physical sign that the equipment was in operation. The success of such an unobtrusive system can be gauged by the very few remarks that were made by the Ss concerning the apparatus.

3. *Measuring Instruments*

The focus of the investigation was on a determination of the personality characteristics of leaders in the two kinds of decisional environments. Two types of leaders were defined. From the perspective of the researchers, an Instrumental Leader was described by a high score on those subcategories (1) of the Bales System for Interaction Process Analysis (IPA) that reflect giving suggestions, opinions, or orientations. In addition, each group selected a Sociometric Leader in response to a postsession questionnaire which asked members to "name the person in your group who exercised the most leadership."

C. RESULTS

The most consistent finding in this study concerns the congruence of leadership roles. The Instrumental Leader was also the Sociometric Leader in 12 of the 15 nonconforming environments, and in all seven of the conformity situations. We also found that groups dealing with student-assistantship monies engaged in more intense interactions than those dealing with the two political problems. Type of problem, however, did not affect this congruence in leadership roles. This may mean that leadership emergence is independent of intensity of interaction.

With reference to only the personality characteristics of the 19 individuals selected in both types of leadership roles, it is indicated in Table 1 that among emergent leaders there was a trend to higher dominance only in some situa-

TABLE 1
LEADERSHIP AND PERSONALITY CHARACTERISTICS IN CONFORMITY
AND NONCONFORMITY DECISIONAL SITUATIONS

Personality characteristic of leaders	Decisional situation	
	Conformity	Nonconformity
High dominance	5	5
Medium dominance	2	4
Low dominance	0	3

tions. For example, it was found that of the seven leaders in the conformity decisional environments, 71 percent were high dominant. But in the non-conformity groups of the 12 leaders only 42 percent were high dominant ($p < .05$ by the Mann-Whitney U test, one-tailed). Additionally, these relationships were not affected by sex or by the size of the group.

Unlike dominance, the attribute of dogmatism showed no consistent pattern in relation to leadership behavior. What was interesting, however, was that high dogmatism in the absence of high dominance was *never* associated with leadership behavior, except in one group where no high dominant personality was present. On the other hand, the reverse relationship—high dominance in the absence of high dogmatism—appeared in seven leaders.

D. DISCUSSION

The findings indicated that sociometric leadership (as defined by the participants in small-group problem-solving situations) corresponded rather closely to instrumental leadership (as determined objectively through the use of IPA). Group members displayed the ability to choose as leaders those individuals who in a more objective sense were rated as the most effective leaders.

An examination of the interaction of leadership, personality, and decisional situation revealed various patterns. Where the rules of the functioning group called for conformity in decision-making, the high dominant personality was almost certain to emerge as leader. But where a more open, nonconforming procedure was followed in decision-making, the high dominants were not nearly as likely to monopolize leadership roles, although the direction of the relationship between dominance and leadership held. Admittedly, certain salient features of the experiment, such as an artificial situation using only college students and the importance of the topics discussed to the participants, may mean that the results have limited applicability.

E. SUMMARY

This study was an experimental investigation of the relationship between leadership, personality, and decisional environments. Two categories of decision-making contexts were analyzed: (a) an open or nonconforming environment where dissents were freely permitted, and (b) an environment where strong pressures for conformity were exerted. It was found that the nonconformity environment encouraged the participation of different types of personalities in the leadership role. On the other hand, the conformity deci-

sional environment seemed to favor the emergence of high dominant personalities as group leaders.

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*Political Research Institute
Department of Government
The Florida State University
Tallahassee, Florida 32306*

COGNITIVE COMPLEXITY AND GROUP PERFORMANCE*¹

University of Washington

TERENCE R. MITCHELL

A. INTRODUCTION

The study of how people perceive their environments has indicated that an individual interacts with his environment by analyzing it and organizing it into meaningful patterns that are congruent with his own needs and psychological makeup. It is the conceptual behavior of a person with respect to his environment that has been examined by psychologists interested in "cognitive complexity."

An individual's personality includes the ideas about himself and the world around him that he entertains consciously and can verbalize in more or less adequate terms. This is his "cognitive universe" (20), and we can divide this universe into "cognitive domains" or subareas of the individual's experience. Some of these domains are fairly similar for most people in a given culture; examples are the domains of domestic animals or automobiles. Other domains are more idiosyncratic, depending upon the individual's unique experiences and specific objects of reference (14): e.g., the domains of self, family, or job. It is the way in which people have structured these domains that has been the major emphasis of psychologists studying complexity. The purpose of the present study was to determine whether the complexity of individuals in leadership positions influenced their group's performance on a variety of tasks and whether leaders with different levels of complexity utilized systematically different behaviors to obtain their respective performance levels.

B. BACKGROUND

A variety of tests has been designed to measure "cognitive complexity" (3, 6, 12, 19). Vannoy (18), however, found very little agreement for these various measures. More specifically, in a factor analysis of 20 complexity

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measures, no factors were found that controlled more than 25% of the common variance. This study pointed out, first, that different measures of complexity have been assessing different concepts and, second, that there does not appear to be a general complexity construct. One reason for this lack of agreement is that complexity varies for a single individual over several cognitive domains (13). This variance depends upon the amount and kind of knowledge one has about the domain and on the kind of functional demands with which that domain is confronted. A measure of the subject's complexity in a leadership domain was, therefore, used in this study.

Some research has already indicated that complex groups perform better than noncomplex groups (7, 11, 15). More specifically, groups composed of members, all of whom had high complexity scores, perform better than groups with members with low complexity scores on dimensions related to information processing, searching, integration, and tracking. The conceptual level theory of information processing (11), which helped to generate the above studies, predicts that complex groups will perform better than noncomplex groups on a variety of dimensions across a variety of situations. This theory also predicts that people with high complexity scores will be more flexible in their behavior. Their work suggests the following hypotheses:

1. Leaders with high complexity scores will have better group performance than leaders with low complexity scores on nonmanipulative tasks.
2. Leaders with high complexity scores will show more variance in their behavior than leaders with low complexity scores in response to variability in the situation.

C. EXPERIMENTAL PROCEDURE

1. *Pretest Measures*

This study utilized the type of questionnaire employed by Scott (12). Subjects are asked to arrange a list of objects (nations, groups, etc.) into categories that they think belong together and to indicate the properties the objects have in common. For example, in a list of nations, Japan and England might be grouped together as island nations; Norway, England, and Sweden as monarchies. This procedure is continued until the number of categories for each subject is exhausted. Dimensional complexity is a function of the number of distinctions provided by the category system. The greater the number of different attributes ascribed to the objects, the higher the complexity score. The test-retest reliability of the measure is reported by Scott as .68 (12).

This measure was chosen for two reasons: First, it can be reliably scored. Specifically, absolute complexity equals $H = \log_2 n - 1/n (n, \log_2 n)$. Where

n is the total number of groups in the list (i.e., AMA, NAACP, bomber crews, etc.), and n_i is the number of groups placed in the same number of categories. Relative complexity equals $R = H/(\log_2 n)$. H may be treated as an appropriate measure of the dimensional complexity of the cognitive domain, and R may be interpreted as the complexity relative to the number of objects to be comprehended.

Second, this measure can be prepared for different cognitive domains. In the past, Scott (12) has used a list of nations as the domain he wished to study. The present study used a list of 20 groups (e.g., NAACP, construction crew, high school choir, etc.) and the subjects were asked to make as many categories as possible. Pretests indicated that the distinctions were of the following type: voluntary-mandatory, competitive-noncompetitive, service-pleasure, elected leader-appointed leader, etc. The scores obtained, therefore, reflect the subject's ability to differentiate among various aspects of group situations and the types of demands that are present. By using a measure directly related to the cognitive domain we wished to examine, we hopefully eliminated the problem pointed out by the Vannoy study (18) with regard to the construct validity of the measure.

2. Subjects

Subjects were 48 Unitarian-Universalist church members at a leadership training conference. On the first evening of the conference each trainee completed the Scott complexity task, and a verbal fluency test (a short vocabulary test to be used as a rough indicant of intelligence). These questionnaires were scored and the people with the eight highest and eight lowest complexity scores were chosen as leaders for the following day. Groups were organized with a leader and two members and they worked on four tasks over a three-hour period. The members were randomly assigned to groups from the pool of 32 remaining subjects. Later tests showed no differences between groups with high complexity leaders and groups with low complexity leaders on their verbal fluency scores and the correlation between leader complexity and verbal fluency was .01.

3. Tasks

Each leader worked on two structured tasks and two discussion tasks. The former tasks were variants of a task used by Fiedler (1) where the group must find the shortest bus route. A map showing the different tours and a mileage table are provided. One of the two tasks used in this study (10) used towns on a hypothetical map with distances supplied and the total dis-

tance traveled as the criteria. The other task of this type required the group to cover various points with two buses to take children to a picnic. Each of the buses had a capacity of 30 and there were various numbers of children at the different points on the map. The total distance traversed by both buses was used as the criteria for this task.

The discussion tasks were concerned with two then relevant topics in the Unitarian-Universalist church. One task required the group to prepare a short statement for the local press which explained and justified the position of their congregation in supporting a minister who counseled and actively assisted several young women to obtain an abortion.

The second discussion task required the group to prepare a short statement containing the principles which should guide the relationship of Negro members to the church. The groups had 20 minutes to work on each task and five more minutes to record their answers.

4. Design

Sixteen leaders, eight with high complexity scores and eight with low complexity scores participated in the study. There were, therefore, 16 groups composed of one leader and two members, totaling 48 subjects in all. Each group worked on all four of the tasks mentioned above with the structured and unstructured types of tasks alternated and high and low complexity leaders counterbalanced. Eight of the groups (four high and four low complexity leaders) received one task order and the other four received the other order, thus counterbalancing the design for task order effects.

There were, therefore, two levels of leader complexity and four task replications giving a 2×4 design for analysis of variance techniques. In other words, we could examine behavior and performance ratings to see if there were major differences between types of leaders, types of tasks, or an interaction between the two.

5. Posttest Measures

After each task, all group participants completed behavioral and Group Atmosphere ratings. The behavioral ratings asked how much influence, control, and enjoyment the leader had, as well as seven other questions from the Leader Behavior Description Questionnaire (17). These latter questions were more specific (e.g., asks questions, laughs, jokes), and four dealt with interpersonal behavior and three with task-related behaviors. All scales were eight-point bipolar scales (e.g., always . . . never). Stogdill and Coons (17) report that corrected reliabilities for 15-item short forms of this questionnaire

are in the .80's and .90's. The Group Atmosphere scale used was the standard questionnaire developed by Fiedler (1) which is composed of 10 bipolar semantic differential type scales. The reliability of this scale is reported by Mitchell (9) as .83.

6. *Performance Criteria*

Measures for the structured task consisted of the number of miles "traveled." For the discussion task three judges rated the group products on overall acceptability. The reliability of these latter judgments (with the use of the Spearman-Brown formula) was .84.

D. RESULTS

1. *Leader Complexity*

The results show that in these four situations the complexity of the leader is positively related to task performance. Separate analyses were performed to examine task order effects, but none was found. The data were, therefore, grouped by task and leader type for all of the following analyses. Performance scores were converted to standard scores for all four tasks and a 2×4 analysis of variance showed that leaders with high complexity scores had significantly better performance than leaders with low complexity scores across the four tasks ($F = 7.69, p < .025$). We mentioned earlier that neither leader nor member complexity scores were related to verbal fluency. These results could, therefore, not be attributed to the intelligence or verbal fluency of the leader.

2. *Behavior Ratings*

The behavior ratings produced interesting but inconsistent results. It is important first, however, to point out that leader ratings and member ratings of the same behavior are often not highly related (9). Table 1 shows the correlations between leader and member ratings of the leader's behavior and of the group atmosphere for all four tasks. The agreement on the leader's behavior was obviously very low in some instances with the estimate of group atmosphere being perhaps the most reliable. With these limitations in mind we will discuss the results in more detail.

Analyses of variance similar to the one mentioned above on performance scores (2×4) were computed for the three general ratings, the seven behavioral ratings, and group atmosphere. These analyses were done for both leaders and members. One result indicated that leaders with low complexity scores saw themselves as having significantly more influence ($F = 6.50, p <$

TABLE 1
CORRELATIONS OF LEADER AND MEMBER JUDGMENTS OF THE
SAME BEHAVIOR FOR EACH TASK

Judgments of	Correlations for			
	Bus routing task	Abortion discussion task	Picnic routing task	Negro discussion task
1. Leader's influence	.32*	.15	.48*	.70*
2. Leader's control	.38*	.36*	.04	-.12
3. Leader's enjoyment	.23	.22	.27	.38*
4. Leader obtaining group participation by asking questions	-.04	.12	.65*	.63*
5. Leader relieving tension by laughing, joking	.45*	.32*	.31*	.05
6. Leader using his own ideas	.41*	.34*	.74*	.18
7. Leader keeping discussion centered on task	.53*	.32*	.30*	-.04
8. Leader inquiring about opinions and feelings of members	.16	.36*	.72*	.41*
9. Leader attempting to give everyone's ideas equal consideration	.23	.31*	.67*	.49*
10. Leader making sure everyone got along well	.08	.42*	.39*	.51*
11. Group atmosphere	.45*	.74*	.69*	.80*

* $p < .05$.

.025), as well as more control ($F = 3.33$, $p < .10$). These results are intriguing in light of the fact that these leaders had poorer performance than leaders with high complexity scores and that the members of these less effective leaders perceived the exact opposite (i.e., that leaders with high complexity scores had more control and influence).

The ratings of more specific behaviors did not produce any significant main effects for leader or member ratings. There were, however, significant main effects for the two different types of tasks (structured vs. discussion). In the two discussion tasks the leader was seen by either the leaders or the members as asking more questions ($F = 3.76$, $p < .05$) and asking more for opinions and feelings ($F = 5.35$, $p < .05$) than in the two routine tasks. These results support the work of Hackman (5), which indicated that the specific behaviors of leaders and members tend to be more a function of the group task than of the leader.

3. Variance in Behavior

The final set of analyses examined the variance in complex leaders' behavior compared to noncomplex leaders. We had hypothesized that leaders with high complexity scores would show more variance in behavior than leaders with

low complexity scores. *F* tests were run on the variance of the 11 leader ratings and 11 (summed) member ratings across all four tasks. Of these 22 tests, four were significant ($p < .05$) in the expected direction, none in the opposite direction. Both the leaders and members perceived the high complexity leaders as having greater variation in the group atmosphere. These leaders were also perceived by the members as varying more in their laughing or joking behaviors and in their enjoyment of the various task settings.

Further support for this hypothesis was provided by the correlations of the first 10 ratings for the high and low complexity leaders with the group atmosphere score. The correlations of these ratings with the group atmosphere ratings were examined in order to see if the leaders were perceived as changing their behavior as the situation was perceived as being more or less favorable. These correlations indicated that high complexity leaders as perceived by themselves and by their members had more variables systematically related to their perception of the group atmosphere than did low complexity leaders. In other words, as the group atmosphere was perceived as changing, the behavior of the complex leaders was perceived as changing. For the leader ratings, these coefficients ranged from $-.29$ to $+.69$ (six out of 10 significant, $p < .05$) for high complexity leaders and from $-.11$ to $+.41$ (one out of 10 significant $p < .05$) for the low complexity leaders. For the member ratings the coefficients varied from $-.02$ to $+.80$ (seven out of 10 significant, $p < .05$) for the high complexity leaders and from $+.26$ to $+.58$ (six out of 10 significant, $p < .05$) for the low complexity leaders.

In summary then, the behavior of the leaders with high complexity scores does seem to be perceived as varying more than that of the leaders with low complexity scores.

E. SUMMARY AND CONCLUSIONS

The results of this study indicate that leaders with high cognitive complexity scores tended to have better performance and more variable behavior than leaders with low cognitive complexity scores. A few words of caution, however, seem appropriate.

Numerous reviews have indicated that leadership traits rarely give consistent results over a variety of settings (4, 8, 16). It seems likely, therefore, that in certain situations complex information processing skills might be harmful rather than helpful. For example, in settings that are relatively simple or extremely stressful, the ability to make fine differentiations might lead to irrelevant behavior on the part of the leader. It is also true that we have sampled only a very small number of intellectual tasks. Different types of

tasks (motor skill or assembly line, etc.) must also be sampled to ascertain the generalizability of these findings.

Finally, although leaders with high complexity scores did not differ in the types of behaviors they used from leaders with low complexity scores, it appeared that they varied their behavior more than low complexity leaders. These data suggest that it is not necessarily what the leader does that is important (being considerate, initiating structure, etc.), but rather his flexibility or ability to change set.

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Organizational Research

University of Washington

33 Johnson Hall

Seattle, Washington 98105



CONFORMITY INFLUENCE IN SMALL GROUPS: A PROBABILISTIC MEASURE*

University of Texas and University of Chicago

ROBERT E. WITT AND SUBRATA K. SEN

A. INTRODUCTION

The conformity influence of small groups on the behavior and attitudes of group members, and those who aspire to be members, has been well documented in the literature of social psychology. Research findings have indicated that conformity influence is a function of four interrelated variable categories: (a) the individual and his characteristics, exemplified by personality, (b) the perceived qualities of the group and the group's behavioral setting, (c) the nature of the norm, or norms, involved in a given behavioral situation, and (d) the nature and extent of past and present interaction between the individual and relevant others in the behavioral situation (3).

An aspect of conformity influence that has received considerable attention has been the question of variation in the nature and extent of conformity influence across types of behavior and attitudes, as well as across groups. A major measurement problem is encountered in investigating variation in conformity influence. This measurement problem is centered around the need for a measure of conformity influence which takes into account:

1. The relevant range of behavior or attitude alternatives in a given situation,
2. Variation in group size,
3. The probability of occurrence of any particular behavior or attitude pattern in a group, given the empirical distribution of behavior or attitude choices in the total subject-sample involved.

The purpose of this paper is to present a probabilistic measure of conformity influence that takes into account the three measurement problems identified above.

The proposed probabilistic measure is based on the multinomial distribution. The multinomial distribution allows us to determine the probability of X_1 occurrences of outcome 1, X_2 occurrences of outcome 2, to X_k occurrences of

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outcome k , in n independent trials, where each trial has k mutually exclusive outcomes (1).

An example involving group member choice of behavior alternatives will clarify the nature of the measurement process involved. Consider two groups of individuals (A) and (B) each with five members. In group A three members choose behavior alternative x and in group B four members choose behavior alternative y . In reality the behavior or attitude choices of the two remaining members of group A and the one remaining member of group B would affect the probability figure produced by the probabilistic measure. However, to simplify explanation of the measure, the choices of the remaining group members are not considered.

Assume that in the total subject-sample involved (i.e., all individuals involved disregarding group membership) the empirical distribution of behavior alternative choices resulted in 15% of all individuals selecting behavior alternative x , while 60% choose behavior alternative y . The probability that three of group A's members would choose behavior alternative x is substantially less than the probability of four of group B's members choosing behavior alternative y , given the empirical distribution of behavior alternative choices in the total subject sample. The lower probability of occurrence of group A's behavior alternative choice pattern can be interpreted as an indication of a relatively higher level of conformity influence in that group.

In the above example, the number of possible behavior alternative choices are the mutually exclusive outcomes for each trial. The probability of choosing the i^{th} behavior alternative is given by its selection percentage in the total sample's empirical distribution of behavior alternative choices. The joint distribution of behavior alternative choices can thus be represented by the following formula:

$$P(X_1, X_2, \dots, X_k) = \left[\frac{n!}{X_1! X_2! \dots X_k!} \right] \theta_1^{X_1} \theta_2^{X_2} \dots \theta_k^{X_k}$$

Where the number of possible behavior alternative choices defines the number of mutually exclusive outcomes, X_k is the number of group members selecting a particular behavior alternative, n is group size, and θ_i is the probability of choosing the i^{th} behavior alternative and is defined by selection percentage of that behavior alternative in the empirical distribution of behavior alternative choices of the total subject-sample. Note that

$$\sum_{i=1}^k \theta_i = 1.$$

The lower the probability of a particular group's behavior alternative choice pattern, the more reasonable the conclusions that the behavior alternative choices of the group members were not independent and that conformity influence on member behavior may have existed.

Conventionally, high scores on a measure reflect the presence of a relatively greater amount of the variable in question. A linear transformation can be used to convert the data produced by the probabilistic measure of conformity influence to a format consistent with this convention. The transformation consists of subtracting the probability figure produced by the probabilistic measure from a constant of one. It is important to note that the transformed probability figure should not be interpreted as a measure of nonindependent occurrence.

The computational procedure involved in the probabilistic measure of conformity influence is summarized in the following formula: $C_i = [(1) - P(X_1, X_2, \dots, X_k)]$, where C_i reflects the degree of inferred conformity influence present in a group in terms of its probability of independent occurrence and $[(1) - P(X_1, X_2, \dots, X_k)]$ is the probability of independent occurrence of a group's behavior or attitude choice distribution converted to observe the convention that a high score on a measure should reflect the presence of a relatively greater amount of the variable in question. It should be noted that the fact that the probabilistic measure takes the behavior of "all" group members into account allows consideration of the conformity influence implications of, for example, 3:2 behavior distributions in a five member group as opposed to a 3:1:1 distribution. Also, the measure accommodates any number of groups, with any degree of variation in group size.

The probabilistic measure will produce a low probability figure for a group in which all members exhibit the same behavior (i.e., select the same behavior or attitude alternative) indicating the probable presence of conformity influence, or for a group in which all members exhibit different behavior (i.e., select different behavior or attitude alternatives) indicating the probable absence of conformity influence. However this limitation of the probabilistic measure of conformity influence serves only to introduce a *conservative* bias, since it operates so as to decrease rather than increase the likelihood of identifying significant conformity influence relationships. For example, two groups, one with all members exhibiting the same behavior and one with all members selecting different behavior alternatives with low probabilities of occurrence, would both generate relatively low multinomial probability values. On the basis of these values it might be hypothesized that approximately the same determinant of group influence (e.g., cohesiveness) conformity behavior rela-

tionship would exist in both groups. However, previous research findings clearly document positive covariation between group cohesiveness and conformity behavior. Thus, the stochastic measure of conformity influence introduces a conservative bias by reducing the extent of expected covariation.

It is important to note that the proposed probabilistic measure of conformity influence can be used with any type of categorizable behavior or attitude variable. Categorization of behavior or attitude in this context requires nothing more precise than that which could be achieved with Likert type scales.

B. METHODOLOGY

The probabilistic measure of conformity influence presented here was recently used in an exploratory study that investigated variation in group conformity influence on member purchase behavior (7). The study was based on data that had been collected as part of a previous project in the area of group influence on consumer behavior (6).

1. *Research Hypotheses*

Two research hypotheses were evaluated in the study:

1. Similarity of brand choice, within groups, varies among products.
2. The relationship between cohesiveness and similarity of brand choice, within groups, varies among products.

These research hypotheses can be presented in a more generalized conformity influence format as

1. Conformity behavior, within groups, varies across types of behavior and attitudes.
2. The relationship between cohesiveness and conformity behavior, within groups, varies across types of behavior and attitudes.

2. *Selection of Test Items*

Product brand choice was the type of overt behavior involved in the study. Given the basic premise of the study, that conformity influence varies in nature and extent across types of behavior and attitudes, several factors were subjectively taken into consideration in attempting to select test items that would be differentially susceptible to conformity influence.

1. The "conspicuousness" of a product affects the susceptibility of its purchase to conformity influence. The "conspicuousness" of a product involves both its visual and verbal visibility.
2. The purchase, use, or consumption of products may involve a concomitant embracing of a particular "user-image" which will vary across products.

3. The likelihood that individuals will perceive differences among brands of a product varies across products.
4. The purchase, use, or consumption of products may involve a perceived declaration of personal taste that will vary across products.
5. The susceptibility of a purchase decision to conformity influence is partially a function of the extent to which the anticipated satisfaction associated with the purchase is derived from or experienced in the consumer's social environment (6, p. 27).

After subjectively evaluating a tentative list of test items, cigarettes, beer, and deodorant were selected for use in the study.

3. *Index of Group Cohesiveness*

Group cohesiveness data were obtained by means of a modified version of Stanley E. Seashore's Index of Group Cohesiveness (4). Seashore's Index employs Likert-type questions which require the respondent to choose among group-oriented, indifferent, or nongroup-oriented responses. Seashore joined three separate, but not inconsistent, meanings of cohesiveness: (a) identifiable membership in the group, (b) attraction to the group or resistance to leaving it, and (c) perception of the group as being better than others in terms of getting along together, helping each other, and sticking together.

Seashore scored his index questions by assigning serial values to the response categories for each question. He indicated that the choice of intervals for the serial scoring values—1, 2, 3, 4, 5—was arbitrary. The intervals were chosen to provide discrimination between degrees of cohesiveness without unduly reducing the number of groups in the extreme categories.

A value of one was assigned to the most cohesive response and a value of five to the least cohesive response on the first and second questions of the Index. A value of one was assigned to the most cohesive response and a value of three was assigned to the least cohesive response for each of the three parts of the third question of the Index. Seashore then reversed each individual's score to observe the convention that high scores should reflect a high value of the variable under investigation. The scores of all members of a group were averaged to produce a measure of group cohesiveness. The maximum attainable score on the index was 19, while the lowest possible score was 5 (4, p. 3N).

Seashore calculated the correlations among responses to questions on his index. The magnitude of the intercorrelations was sufficiently high to lead him to the conclusion that the questions measured a common element, group cohesiveness.

Seashore's Index of Group Cohesiveness was designed for use in an industrial research environment. It was necessary, therefore, to modify the wording of

the questions in the index in order to adapt it for use in the student environment of this study.

Similar wording changes have been made by other researchers who have used Seashore's Index in modified form. John W. Slocum, Jr., used a modified version of Seashore's Index in a study which involved students (5). The intercorrelations among question responses obtained by Slocum compared very favorably with those obtained by Seashore (5, p. 79). This was interpreted as an indication that minor modification of the wording in Seashore's Index questions does not impair the instrument's validity.

The modified Index of Cohesiveness used in this study was scored in basically the same manner as was Seashore's. The same range of serial values was used. However, high scores were assigned directly to high cohesive responses to eliminate the necessity of converting raw scores to adjusted scores. A value of five was assigned to the most cohesive response in Questions One and Two, with a value of one being assigned to the least cohesive response. A value of three was assigned to the most cohesive response in each of the three parts of Question Three, with a value of one being assigned to the least cohesive response.

Intercorrelations among question responses on the Modified Index were examined. All 20 correlation coefficients were statistically significant when the hypothesis that the true population value of the coefficient of correlation is zero was tested by the t statistic with $N-2$ degrees of freedom. Sixteen of the 20 correlation coefficients were significant at the .001 levels.

Group cohesiveness, a well established determinant of the amount of influence a group may have on its members, was the only determinant of conformity influence (predictor variable) involved in the study. However, future studies could readily incorporate additional scalable determinants.

4. Sample

The sample used in this study consisted of 50 groups drawn from a population of male undergraduate Pennsylvania State University students. The sample was not random in the strict sense of the word; sociometric studies by their nature cannot be completely random in the selection of subjects. The nature of the selection process, however, provided that the sample would be approximately representative of the population from which it was drawn.

Several factors influenced the determination of group size. It has been demonstrated that there is less tendency toward the formation of subgroups in groups of five individuals than in groups of 12 individuals.¹ Formation of

¹ A. P. Hare. Interaction and consensus in different size groups. *Amer. Sociol. Rev.*

subgroups within the test groups would contaminate the analysis of group influence on brand choice. The ideal group size with respect to this factor, therefore, was closer to five than to 12. Another factor that favored smaller rather than larger groups involved the formation of groups by group nuclei. The smaller the size of the group, the less difficulty group nuclei would encounter in assembling their groups.

An announcement that participants were wanted for a marketing experiment was made in several business and liberal-arts classes. The first 50 students who met all prerequisites for participation were selected as group nuclei. Each group nucleus was instructed to select as participants with him in the experiment four friends with whom he spent time socially. All participants selected for a group had to be, at least, "acquaintances" of the nucleus and each other.

5. Procedure

The test instruments were administered to the groups during a three-week period. When a group nucleus had formed his group he was assigned a testing time and room. All groups were tested as complete units, no incomplete groups (less than five members) were tested. No communication was allowed among subjects during the testing. All subjects were compensated.

C. RESULTS

1. Hypothesis I

A measure of the degree of similarity of purchase behavior in each group was generated by using the previously discussed probabilistic measure of conformity influence.² Conformity in the test groups ranged from perfect similarity (i.e., all five members exhibiting the same purchase behavior) to perfect dissimilarity (i.e., all five members exhibiting different purchase behavior). The probability of occurrence of each group's purchase behavior pattern (generated by previously discussed stochastic measure) was interpreted as a proxy measure of conformity influence.

One-way analysis of variance was used to test the significance of the difference among the mean similarity of purchase behavior probability scores of the three test products. Data to be analyzed by fixed-effects analysis of variance should be based on independent observations both within and across groups. With the use of a table of random numbers three subsamples of

1952, 17, 261-267. See also E. Thomas & C. Fink, Effects of group size. *Psychol. Bull.*, 1963, 60(No. 4) 371-384.

² Interested readers may obtain a copy of the computer program for the probabilistic measure by writing to the first-named author, at the address shown at the end of this article.

16 each were selected from the sample of 50 groups. The three subsamples were assigned in the order selected to the three test products. Thus, there were no systematic connections or dependencies among the three subsamples.

The value of F produced by the analysis of variance ($F = 4.86$) was significant at the .02 level with 2 and 45 degrees of freedom. This was interpreted as an indication that similarity of purchase behavior (i.e., conformity influence) does vary across product types.

2. Hypothesis II

The significance of the difference among the three cohesiveness-similarity of purchase behavior correlations was evaluated by means of correlation analysis and the statistic V (2). If correlation coefficients are to be compared statistically, they must be drawn from independent samples. Thus, the three subsamples drawn in conjunction with testing the first hypothesis were used in testing hypothesis II. The correlation coefficients produced are presented in Table 1. The resulting value of V (1.83) was not significant.

TABLE 1
CORRELATION COEFFICIENTS AND Z-RATIO PROBABILITY LEVELS FOR
COHESIVENESS-BRAND-CHOICE RELATIONSHIPS

Relationship number	Relationship description	R value	Probability of chance occurrence of r -differences
1	cohesiveness-cigarette brand choice	.5064 ^a	relationship No. 1 to relationship No. 3 (.12)
2	cohesiveness-beer brand choice	.4689 ^b	
3	cohesiveness-deodorant brand choice	.0953 ^c	relationship No. 2 to relationship No. 3 (.14)

^a Significant at .02 level.

^b Significant at .05 level.

^c Not significant.

Given that the V statistic failed to indicate a significant difference among the three r values, the r values for the cohesiveness-cigarette brand choice and the cohesiveness-beer brand choice relationships were tested separately against the r value for the cohesiveness-deodorant brand choice relationship. Testing the relationships separately increased the likelihood of identifying a variation in relationship strength if one did exist. The Z -transformation ratio was used to test these relationships. The resulting ratio values and their significance levels are presented in Table 1.

D. DISCUSSION

The findings of this study indicate that purchase decisions vary in their susceptibility to group influence. This conclusion is based on the following observations: First, similarity of purchase behavior within groups varied significantly among the test products even when the probability of occurrence of behavior patterns was taken into account; and second, the strength of the relationship between a determinant of group influence (i.e., group cohesiveness) and similarity of purchase behavior within groups varied within pairs of test products. A more generalized interpretation of the study's findings is that conformity influence varies across types of behavior.

The following factors were hypothesized as possible causes of the variation in susceptibility of purchase decisions to conformity influence: (a) the conspicuousness of the product when in the process of purchase or use, (b) the extent to which purchase or use of the product involves a concomitant embracing of a "User-image," (c) the declaration of personal taste involved in purchase or use of the product, (d) the likelihood that subjects could perceive physical differences among brands of the product, and (e) the extent to which the anticipated satisfaction associated with the use or consumption of the product is derived from, or experienced in, the consumer's social environment.

If one generalizes and expands on the situation-specific hypothesized causes of variation in conformity influence presented above, the following tentative determinants of variation in conformity influence across types of behavior can be hypothesized:

1. The "conspicuousness" (i.e., visibility) of the behavior or attitude to relevant others,
2. The extent to which adoption of a particular behavior alternative or attitude involves a concomitant embracing of an "image" perceived to be associated with individuals who adopt that behavior alternative or attitude,
3. The "role-relevance" of the behavior type or attitude in question,
4. The extent to which the anticipated satisfaction associated with adoption of a particular behavior or attitude alternative is derived from, or experienced in, the individual's social environment.

It should be noted that the hypothesized general determinants of variation in conformity influence presented above may be to a certain extent situation-specific. They have been developed from a study that involved a single type of overt behavior. It is reasonable to expect that replications and extensions of the study involving other types of overt behavior or attitudes would result in the development of alternative generalized determinant structures. However,

it is also reasonable to anticipate that these alternative structures would parallel, at least in part, the generalized determinant structure presented in this study.

E. SUMMARY

Measurement problems are encountered in investigating variation in conformity influence across types of behavior and attitudes. This study presents a stochastic measure of group conformity influence that takes into account, (a) the relevant range of behavior or attitude alternatives in a given situation, (b) variation in group size, and (c) the probability of occurrence of any particular behavior or attitude pattern in a group, given the empirical distribution of behavior or attitude choices in the total subject-sample involved. The measure was used in an exploratory study of variation in group conformity influence across three overt behavior categories. Group conformity influence was found to vary significantly across behavior types. In addition the three determinants of group influence (i.e., cohesiveness)-conformity behavior relationships were examined for between-relationship variation in strength. Significant variation was observed. On the basis of the study's finding a set of hypothesized semigeneral determinants of variation in group conformity influence are presented. Replications and extensions of this study, involving other types of overt behavior and attitudes, are necessary if a truly "general" set of conformity influence variation determinants is to be developed.

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*Department of Marketing Administration
The University of Texas at Austin
Graduate School of Business
Austin, Texas 78712*

A TYPOLOGICAL ASSESSMENT OF "A STUDY OF VALUES" BY Q-METHODOLOGY*

State University of New York at Albany

LEONARD V. GORDON

A. INTRODUCTION

In his discussion of the logic of typing, Stephenson (28) divided "type" definitions into two groups. The first definition refers to "a class of persons having a common characteristic or characteristics," with the characteristics rather than the persons being used for typological identification. *R*-technique is commonly employed in this approach. In the second, a "person" serves as a representative of a type. The "person" may be an actual individual, an average group member, or some conceptualized entity, such as those incorporated in Spranger's system. *Q*-technique would be used to establish a typology based on persons or to test empirically the validity of a conceptually derived system.

Stephenson proposed that typing of the second class could be most meaningfully accomplished by correlating "persons" on the basis of their responses to *Q*-sorts, and then by factor analyzing the matrix of correlations. The resultant factors would define the types and the factor loadings would represent an individual's or group's relationship to the types so identified. Stephenson's proposal remained untested, probably due to the high cost of individual *Q*-sort administration and the absence of a standard deck that had wide and varied usage.

Under the assumption that a fully ipsative forced-choice test can be treated as a special case of a *Q*-sort,¹ Gordon (11) tested Stephenson's approach by intercorrelating 59 samples of varied occupational orientation on the basis of their *Survey of Interpersonal Values* or SIV (9) profiles. A factor analysis of the resultant matrix yielded a clearly interpretable typological structure. This application of forced-choice instrumentation for typological analysis was termed *Q*-typing. Subsequently *Q*-typing was successfully applied both multinationally with the SIV (10) and domestically with other instrumentation

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¹ The equivalence of the forced-choice and *Q*-sort techniques is discussed conceptually in Gordon (11) and demonstrated empirically in Gordon and Hofmann (13) and Gordon and Kikuchi (14).

(12). The present paper is concerned with a typological assessment of *A Study of Values* or ASV (1), utilizing *Q*-typing procedures.

The ASV was designed to measure the relative prominence of six values based on the intuitively derived typology of the German philosopher, Eduard Spranger (21).² Two studies have been previously performed to assess statistically Spranger's typology, as represented in the ASV. In the first, Lurie (20) in an item factor analysis found only four major factors—Social, Theoretical, Religious, and Philistine—the latter being defined by both economic and political items. In the second Brogden (2), in a factor analysis of items from selected forced-choice sets, also obtained only four first-order factors that resembled the original ASV scales—Social, Theoretic, Antireligious, and Aesthetic. A second-order factor, on which political and economic items were prominent, resembled Lurie's Philistine factor. A further point of similarity in the two studies was in the nature of the Religious and Antireligious factors both of which reflected a concern with the conventional creed or indoctrination of the Christian church, rather than Spranger's more universal religious conceptualization.

Both the Lurie and Brogden analyses employed *R*-methodology. However, since Spranger's typology was based on idealized "persons" rather than on clusters of characteristics, *Q*-technique would be the more appropriate for its empirical evaluation (28). The present study will provide an empirical assessment of Spranger's typology, using this alternate procedure. The results will be compared with those obtained with the ASV through *R*-methodology, as well as with those obtained in the earlier *Q*-typing analysis with the SIV.

B. METHOD

1. The Samples

About half of the samples used in the present study were obtained from the *Manual of A Study of Values* (1). A screening of ASV references in Buros (3) and in the Psychological Abstracts from 1964 through 1967 yielded the remainder.³ Sixty groups were identified as being appropriate for the present analysis. Thirty-seven (1 to 37) were male and 23 (38 to 60) were female.

² This is an early example of the measurement of construct systems developed by European social theorists, a practice which, by now, is quite common (e.g., Machiavellianism, Anomie, Bureaucratic Orientation). The apparent transcultural validity of these constructs is worthy of mention.

³ Only those groups that were tested under standard conditions were included. Groups for which no references are specified were taken from the ASV manual. The writer is indebted to Professor Akio Kikuchi who assumed major responsibility for screening the literature for sample selection.

These groups were selected so as to maximize the variety of occupational areas included without an undue saturation in any one area. Following is a brief description of each group.

(a) Groups 1 through 3 were military officers: 1. submarine school graduates (32); 2. Naval Academy graduates; and 3. air force officers (17).

(b) Groups 4 through 10 consisted of male business students, businessmen, and scoutmasters: 4. advertising space salesmen (22); 5. executives in an advanced management program at Harvard University (29); 6. Southern businessmen; 7. business administration graduate students at Harvard University; 8. business administration students at Boston University; 9. business administration freshmen at the University of Denver (31); and 10. scoutmasters.

(c) Groups 11 through 17 included other students, as well as scientists: 11. research managers, members of the Industrial Research Institute (29); 12. scientists in industry with management responsibilities; 13. professional engineers (29); 14. undergraduate students at Newark College of Engineering; 15. national sample of male college students; 16. college students, National Merit Scholarship winners (30); and 17. high school boys in southwestern New Mexico (25).

(d) Groups 18 through 20 consisted of male clergy or religious students: 18. clergymen; 19. students of religious work at the Hartford School of Religious Education; and 20. theological students.

(e) Groups 21 through 23 were comprised of dental and medical students: 21. dental students at Seton Hall College (23); 22. senior medical students at 21 medical schools; and 23. freshmen medical students at 28 medical schools.

(f) Groups 24 through 28 were males in social service occupations: 24. personnel and guidance workers; 25. counselor-candidates at 27 universities (4); 26. Peace Corps volunteers in training (18); 27. experienced social workers (19); and 28. social work graduate students at Florida State University (19).

(g) Groups 29 through 34 included male education students, teachers, and administrators: 29. education graduate students at Harvard University; 30. teaching candidates in California (16); 31. junior and senior public high school teachers in Wisconsin; 32. experienced teachers attending summer session at the University of Oklahoma (26); 33. administrators in public high schools in Wisconsin; and 34. public school superintendents in Georgia (24).

(h) Groups 35 through 37 were in the "arts": 35. and 36. freshmen and

seniors, respectively, at the Rhode Island School of Design (6); and 37. newspaper rewrite men (21).

Groups 38 through 60 consisted of female samples, of which all but 50 through 56 have direct counterparts in the male groups described above.

(i) (See *b*): 38. business administration graduate students at Harvard-Radcliffe; 39. business administration freshmen at the University of Denver (31).

(j) (See *c*): 40. national samples of female college students; 41. college students, National Merit Scholarship winners (30); and 42. high school girls in southwestern New Mexico (25).

(k) (See *d*): 43. students of religious work at the Hartford School of Religious Education.

(l) (See *e*): 44. freshmen medical students at 28 medical schools.

(m) (See *f*): 45. personnel and guidance workers; 46. counselor-candidates at 27 universities (4); 47. Peace Corps volunteers in training (18); 48. experienced social workers (19); 49. social work graduate students at Florida State University (19); 50. social workers in a Veterans Administration hospital.

(n) Groups 51 through 55 were in medical support occupations. Groups 53 through 55 were in Veterans Administration hospitals: 51. married nurses; 52. graduate students of nursing at Yale University; 53. occupational therapists; 54. dietitians; and 55. laboratory technicians.

(o) (See *g*): 56. elementary school teachers identified as outstanding in a teacher's characteristic study (15); 57. experienced teachers attending summer session at the University of Oklahoma (26); 58. teaching candidates in California (16).

(p) (See *h*): 59. and 60. freshmen and seniors respectively at the Rhode Island School of Design (6).

2. Procedure

The 60 groups were intercorrelated on the basis of their mean scores on the six Allport-Vernon-Lindzey scales and the resultant intercorrelation matrix was analyzed by the principal-components method. The first five factors which accounted for 95.3 percent of the variance then were subjected to varimax rotation. The orthogonal factor loadings are presented in Table 1.⁴

⁴ In comparing ipsative profiles, the correlation coefficient takes into account differences in shape but not in dispersion, and the *D* statistic (5) accounts for differences in dispersion but not in shape. In both the present and past *Q*-typing studies it was found that the same clusters were obtained through the use of the correlation coefficient and the *D* statistic. This was due to the relatively narrow range of fairly sizable dispersions obtained for the samples under consideration.

TABLE I
ROTATED VARIATE LOADINGS

Groups	N	I	II	III	IV	V
1. Naval officers (submarine)	154	.83	.20	.51	-.07	.93
2. Naval officers (academy graduates)	90	.87	.27	.57	.03	.17
3. Air Force officers	213	.94	.27	.15	-.01	.15
4. Salesmen	44	.92	.19	.09	-.18	.07
5. Executives	555	.89	.29	.14	.04	.00
6. Southern businessmen	49	.82	.24	-.25	.15	-.09
7. Business admin. students (M) graduates	308	.85	-.23	.22	.11	.07
8. Business admin. students (M) undergrad.	173	.99	.03	-.09	-.03	-.07
9. Business admin. students (M) freshmen	71	.85	.11	-.11	.04	-.04
10. Scoutmasters	173	.10	.24	.10	-.42	-.15
11. Research managers	236	.72	-.07	.47	.08	-.12
12. Scientists (industrial administrators)	204	.48	-.20	.84	-.04	-.14
13. Engineers	82	.14	.35	.49	-.00	-.10
14. Engineering students	503	.79	.18	.17	-.11	-.04
15. College (M) students	5894	.91	.00	.19	-.10	.12
16. College (M) students—scholarship	604	.05	.28	.97	-.01	.10
17. High-school (M) students (New Mexico)	150	.81	.93	.48	-.08	-.03
18. Clergymen	24	-.19	.65	-.07	-.12	.35
19. Religious work (M) students	17	-.70	.11	-.03	-.44	.09
20. Theological (M) students	31	-.71	.19	-.23	-.28	.21
21. Dental students	64	.10	.10	.48	-.09	.17
22. Medical (M) students (4th year)	1482	.24	-.14	.95	-.10	.00
23. Medical (M) students (1st year)	2492	.21	-.10	.93	-.21	.14
24. Personnel & guidance workers (M)	217	-.10	-.02	.45	.05	-.17
25. Counselor (M) candidates	153	.01	.14	.20	-.91	.14
26. Peace Corps (M) volunteers	131	-.90	-.11	.11	-.01	.00
27. Social workers (M)	19	-.17	-.42	.10	-.14	.27
28. Social work (M) students	62	-.33	-.16	.14	-.70	.43
29. Education students (graduate)	40	-.21	-.91	.27	.17	.09
30. Teaching (M) candidates	450	.18	-.15	.44	-.41	.29
31. Teachers, high school	126	.47	.31	.21	-.29	.15
32. Teachers M—Oklahoma	35	-.57	.04	.14	.01	.09
33. High school Administrators	124	.40	.22	-.01	-.41	-.02
34. Public school superintendents	46	.34	.23	.17	-.07	-.09
35. Art (M) students (senior)	64	-.00	-.25	.47	.82	-.18
36. Art (M) students (freshmen)	114	.20	.27	.43	.44	.01

TABLE 1 (continued)

Groups	N	I	II	III	IV	V
37. Rewrite men	45	.48	— .51	.68	.20	.09
38. Business admin. students (F) graduate	77	— .06	— .28	.01	.92	.27
39. Business admin. students (F) freshmen	25	— .06	.82	— .51	.17	.17
40. College (F) students	2475	— .91	.10	— .30	.24	.15
41. College (F) students— scholarship	174	— .75	.21	.58	.10	.23
42. High school (F) students (New Mexico)	131	— .28	.91	— .12	— .27	.10
43. Religious work (F) students	42	— .87	.42	— .21	— .15	.08
44. Medical (F) students (1st year)	145	— .19	— .26	.93	— .11	.13
45. Personnel and guidance workers (F)	91	— .87	— .18	— .08	— .36	— .28
46. Counselor (F) candidates	61	— .92	.20	.08	— .31	— .06
47. Peace Corps (F) volunteers	131	— .75	— .45	.27	.15	.37
48. Social workers (F)	37	— .86	— .47	.12	— .13	.07
49. Social work (F) students	91	— .95	.05	— .13	— .20	.21
50. Social workers (V.A.)	33	— .37	— .90	.17	— .16	— .07
51. Nurses	53	— .24	.92	.11	— .08	— .28
52. Student nurses—graduate	62	— .92	.26	.25	.05	.14
53. Occupational therapists (V.A.)	25	— .85	— .14	.15	.47	— .13
54. Dieticians (V.A.)	41	— .31	.82	— .08	.32	— .34
55. Laboratory technicians (V.A.)	28	— .25	— .11	.89	.21	— .30
56. Teachers—outstanding	20	— .71	.60	— .19	— .30	— .02
57. Teachers (F)—Oklahoma	42	.04	.93	.29	— .22	.04
58. Teaching (F) candidates	1066	— .90	— .20	— .32	.09	.21
59. Art (F) students (senior)	96	— .85	.21	.05	.46	.12
60. Art (F) students (freshmen)	72	— .64	— .18	.32	.66	.15

Each factor was interpreted by first noting the nature of the groups that had the highest loadings, and by then identifying the mean value scores which distinguished these groups from groups defining other factors. For the latter purpose, the simple average of the means of all groups with loadings of plus or minus .90 or above on each factor was computed. Where there was only one group with a loading of this magnitude, the average of the means of the three groups with the highest loadings was obtained. The average means are presented in Table 2 for each scale. For bipolar factors, separate means are presented for each pole. Average values that fall within the upper and lower quarters of the entire distribution of scale means are arbitrarily treated as being high and low, respectively, and are underscored in Table 2.

TABLE 2
THE MEDIAN AND RANGE OF THE MEANS OF EACH SCALE AND THE OVERALL ADV
MEANS FOR THE SET OF GROUPS DEFINING EACH FACTOR

Scales	Means		Factors						
	Median	Range	I ^a	I'	II	II'	III	IV	IV'
Theoretical	42.0	19.0	42.0	<u>38.3^b</u>	40.3	43.1	49.0	41.0	42.8
Economic	38.3	22.9	46.5	<u>34.9</u>	39.3	36.3	35.5	41.2	36.3
Aesthetic	38.9	21.9	<u>33.1</u>	<u>43.2</u>	36.0	44.8	39.7	46.2	36.7
Social	38.0	18.5	35.7	<u>42.5</u>	38.8	43.9	35.8	<u>33.9</u>	<u>41.3</u>
Political	40.1	14.5	<u>44.7</u>	<u>37.2</u>	38.0	38.8	40.5	39.8	39.8
Religious	40.8	26.0	<u>37.6</u>	<u>43.6</u>	<u>46.9</u>	<u>32.9</u>	39.1	38.4	40.2

^a Groups on which the overall means were computed (primes represent the negative poles): I 3, 4, 8, 15; I' 40, 46, 49, 52, 58; II 42, 51, 57; II' 29, 50; III 16, 22, 24, 44; IV 35, 36, 38; IV' 24, 25, 28; and V None.

^b Values that fall within the upper or lower quarter of the distribution of means for a scale are underlined.

C. RESULTS

Factor I is bipolar, the positive pole representing what may be termed the *Economic-Political Man*. Groups with the highest loadings are male undergraduate business administration students, air force officers, advertising salesmen, and male college students. Further, all military, business, or business-oriented male samples have moderate to high positive loadings of this factor. It will be noted (Table 2) that the set of defining samples are distinguished from those defining the remaining factors by having the highest means on both the Economic and Political scales, and the lowest on the Aesthetic, and by a low Religious mean as well.

The negative pole reflects the *Social Man*. The five groups with the highest negative loadings on Factor I, all female, are social work students, graduate students of nursing, counselor candidates, teaching candidates, and college students. Members of the first four groups are students who typically relate professionally to people in a "helping" way. Other female groups with a similar professional orientation, such as Peace Corps volunteers, occupational therapists, social workers, and personnel and guidance workers, and religious students of both sexes also have high negative loadings on this factor. The groups defining the negative pole have relatively high average means (Table 2) on the Social and Aesthetic scales and the lowest means of all defining groups on the Theoretical, Economic, and Political scales.

Factor II is also bipolar with the positive pole representing what might be

called (following Brogden) the *Christian Conservative*. Groups with loadings of .90 or above are females and consist of teachers from Oklahoma, married nurses, and southwestern New Mexico high school students. Male high school teachers and administrators, school superintendents, southern businessmen, and scoutmasters also have substantial positive loadings on this factor. The groups with the highest loadings are distinguished by their high average mean on the Religious scale (Table 2). While this is the only factor on which all of the religious occupational samples have positive loadings, the magnitude of these loadings is moderate.

Two groups with negative loadings of .90 or greater on Factor II are male education graduate students and female social workers in a Veterans Administration hospital. Like the groups at the negative pole of Factor I, they have high means on the Social and Aesthetic scales. Unlike these groups they have very low means on the Religious scale (Table 2). Since experienced social workers and Peace Corps volunteers, of both sexes, also have moderate negative loadings on this factor, the *Social Man* appears to be represented here as well.

Factor III clearly identifies the *Theoretical Man*. Gifted college students and medical school students of both sexes define this factor, which is not bipolar. Scientists in industry and hospital laboratory technicians also have very high loadings on it. The defining groups have higher means than any of the others on the Theoretical scale (Table 2).

Factor IV is bipolar. The positive pole is taken to represent the *Aesthetic Man*. While the sample with the highest loadings consists of female business administration students at Harvard-Radcliff, four of the five groups with the next highest loadings are art students and the fifth are occupational therapists who utilize the creative and manual arts in their work. The defining groups have the highest mean of all on the Aesthetic scale and the lowest on the Social scale (Table 2).

The *Social Man* reappears for a third time at the negative pole with three male groups—counsellor candidates, personnel and guidance workers, and social students—having the highest loadings. The defining groups have a high mean on the Social scale (Table 2).

Factor V is not interpreted, since no group has a very high loading on this factor. Those with the highest loadings, interestingly, are Peace Corps volunteers of both sexes, clergymen, and male social work students all of whom have social service orientations.

Another approach used to assess the meaningfulness of *Q*-typing analysis

(11) involved determining the appropriateness of the factor descriptions to groups that had moderate or high loadings on more than one factor. This approach is congruent with Spranger's notion that a given "man" does not necessarily belong exclusively to one or another "type." A number of such groups will be examined.

(a) Male clergymen, religious work students, theological students, and Oklahoma teachers, as well as female religious work students and teachers, identified as outstanding, are both Social Man and Religious Conservative types, as reflected by negative and positive loadings on Factors I and II, respectively. Members of these groups would be expected to be motivated to help other people and to be doctrinaire in their religious outlook.

(b) Southern businessmen, business administration students at Denver University, male high school teachers and administrators, and public school superintendents represent the Economic-Political and Religious Conservative types with positive loadings on Factors I and II. Practical concerns, a desire for power or influence, and a conservative Christian theological position would characterize such individuals.

(c) Research managers, scientists in administrative positions in industry, professional engineers, engineering students, submarine officers, and high school students from southwest New Mexico combine the Economic-Political and Theoretical types, having positive loadings on Factors I and III. Being interested in the practical, having a desire for power, and being empirical, critical, and rational in their search for knowledge would seem to characterize these groups. Only the high school students seem out of place in this cluster.

(d) Of the five art-oriented groups with high loadings on Factor IV, the female art students and occupational therapists have negative loadings on Factor I and the male art students have positive loadings on Factor III. Thus, in the female, the Aesthetic and Social types appear in combination, while in the male the Aesthetic and the Theoretical are associated, reflecting a greater helping orientation on the part of the female and a more cognitive and rational posture in the male.

(e) Peace Corps volunteers and social workers, of both sexes, and male social work students have negative loadings on combinations of Factors I, II, or III, each of which appears generally to represent an aspect of the Social type.

(f) Among the remaining groups, scoutmasters combine the Christian Conservative and Social Man types; occupational therapists the Social and Aesthetic; dental students the Theoretical, Economic-Political, and Christian

Conservative; and male personnel and guidance workers, male teaching candidates, and female National Merit Scholarship winners the Theoretical and Social. All of these descriptions appear to be quite plausible.

D. DISCUSSION

The outcome of the present *Q*-typing analysis fails to provide empirical support for Spranger's typological system, but rather agrees very closely with the results obtained by Lurie and Brogden through *R*-analysis. Further, it is in many ways comparable to the results of Gordon's (11) *Q*-typing analysis which utilized a similar array of occupational groups but very different item content.

In the Lurie, Brogden, and present analyses, Spranger's *Economic Man* and *Political Man* appear to be typologically one and the same. In Gordon's analysis, groups similar to those defining the *Economic-Political* type in the present study—military officers, administrators in industry, and salesmen—defined a "*Control of Others*" type which had as its dominant interpersonal value the desire to control and influence other people, an orientation exactly descriptive of Spranger's *Political Man*.

Spranger's mystical and somewhat pantheistic conceptualization of the *Religious Man* is not supported by the present analysis. Rather, the *Christian Conservative* type appears to be similar to that described by the religious factors of both Brogden and Lurie, which were characterized by a conservative orientation toward the Christian religion and an uncritical acceptance of the teachings of the Christian church. This latter description would seem to fit the groups with very high loadings on the Christian Conservative factor—southern businessmen, scoutmasters, teachers of both sexes from Oklahoma, predominantly Catholic high school girls from southwestern New Mexico, married and presumably older nurses, and administrative members of the educational establishment. Interestingly, the several religious samples, mostly students who probably were less "fundamentalistic" than the aforementioned groups, had only moderately high loadings on this factor. The Christian Conservative has a parallel in the "*Institutional Restraint*" type in Gordon's analysis, being defined by somewhat similar groups. The latter was characterized by strong conformist values.⁵

⁵ Eckhardt (7) found the ASV Religious value to be associated with militaristic rather than with nonviolent or pacifistic attitudes. His conclusion that high scores on this scale reflect social conformity and religious dogmatism are consistent with those presented here.

The *Theoretical* type, clearly identified in the present analysis by gifted college students, scientists, medical students, and laboratory technicians, was also found by Lurie and Brogden. Again, in Gordon's analysis, a set of very similar samples described a type called "*Self-Determination*," the dominant value orientation of which was independence, or being free to do as one wished. That an interest in the pursuit of knowledge and a valuing of freedom of action is found in counterpart sets of "persons" makes eminent sense.

The *Social* type, identified by both Lurie and Brogden, emerged at the negative pole of several factors in the present analysis. The somewhat greater complexity of the Social type in the present analysis may have resulted from the modification of the Social scale in the 1960 edition of the ASV to include feelings of "altruistic love and philanthropy." The Social type has a parallel in Gordon's "Service to Others" type, which was defined by Peace Corps volunteers, conscientious objectors, teachers, and in subsequent analyses, religious students as well. The primary interpersonal orientation of these groups involved a desire to help other people.

The Aesthetic type, less strongly represented in the present study, had been identified as a "less important" and a major factor, respectively, by Lurie and Brogden. Since no artistic groups were included in Gordon's analysis no corresponding factor could be identified.

In conclusion, first, it is theoretically interesting that *Q* and *R* methodology yielded equivalent results when used for typological analysis with essentially the same instrument, and that similar "types" emerged when a similar set of "persons" were factor analyzed on the basis of their responses to different instruments. These findings suggest that the conjoint use of the two methodologies and of different sets of stimuli might result in more reliable and comprehensive results in typological research.⁶

Second, Stephenson's (28) *Q*-approach is designed to provide typological information for individuals or groups in the form of either factor loadings or correlations with samples defining each type. This descriptive technique has been found to be meaningful for the Survey of Interpersonal Values and it appears to be effective with the ASV as well. A variety of ASV group profiles were interpreted by both the conventional and *Q*-typing procedures. While for most groups both sets of interpretations were highly similar, where meaningful differences were noted, *Q*-typing seeming to provide the more defini-

⁶ For example, a *Q*-type analysis of the Edwards Personal Preference Schedule yielded only four types, three of which were similar to those identified in the SIV analysis (12).

tive or reasonable interpretations.⁷ A more systematic and extensive evaluation of this descriptive technique certainly appears to be warranted.

Finally, on the basis of both the present and prior research a commentary on the relatedness of the Economic and Political scales and a major redefinition of the Religious scale would seem to be called for in a revised ASV manual. Profile interpretations would then reflect more accurately what the ASV seems to be measuring.

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⁷ The conventional procedure would employ the table on page 12 of the ASV test booklet to describe scale scores as being high or low, while the Q-typing procedure would interpret loadings (positive or negative) of say .40 or greater as reflecting relatedness.

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School of Education

State University of New York at Albany

Program for Behavioral Research

1400 Washington Avenue, Room 114

Albany, New York 12203



DIFFERENTIAL COGNITIVE DISSONANCE AND DECISION LATENCY*

Hunter College and Queens College

FLORENCE L. DENMARK AND BRUNHILDE RITTER

A. INTRODUCTION

Investigations initiated by Festinger's Cognitive Dissonance Theory (3) have been extensive and varied. Research treating discrete repeated dissonance has been neglected, however, with one published account focusing on this area (1). In Cohen's study, four repeated dissonance (RD) tasks (controls were exposed to repeated consonant tasks) preceded a single critical dissonant task. The procedure involved writing essays that were consonant or dissonant with Ss' previously expressed views. Employing shifts in attitude as the measure of effects, Cohen reported results that indicated that an obtained decrease in magnitude of response may have been the result of prior exposure to dissonance. He noted that additional clarification was needed, since his data suggested the possibility that Ss given repeated dissonance exposure prior to the critical task may have reduced dissonance via the mode of obligation increase: i.e., by minimizing their feeling of personal responsibility for the opinions expressed through an increased feeling of being forced.

The present study was designed to test the effects of differential preliminary dissonance arousal on subsequent repeated dissonance exposure while minimizing differences in the amount of outside obligation between groups. This was achieved by presenting a single Preconsonant (PC) Task or Predissonant (PD) Task followed by the critical RD task. Thus, PD Ss were subjected to only one more situation of obligation than PC Ss. The RD task involved making decisions on three social issues that were previously found to have saliency for the college student population. Decision time, a neglected measure in dissonance research, rather than attitude change was used as the critical measure. Decision time provided some of the quantification deemed necessary for Dissonance Theory by being a more readily scalable measure than attitude change. The hypothesis tested was as follows: Magnitude of reaction to repeated dissonance is a negative function of preliminary dissonance arousal.

Another factor that would be expected to influence Ss' reactions to dissonance

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is awareness of responses of "others," as evidenced by the many conformity and social influence studies. Thus, Ss who experience different degrees of preliminary dissonance arousal but who complete the critical task simultaneously should show greater uniformity of response than such Ss who complete the critical task in homogeneous groups. Therefore, a secondary hypothesis of this study is that conformity pressures will operate to minimize differential effects induced by different preliminary dissonance arousal treatments.

B. PROCEDURE

The procedure was conducted in three sessions spaced several weeks apart with the use of 54 female General Psychology students at Queens College as subjects.

1. Session I

In Session I all Ss were given the Internal *versus* External Control Scale (I-E Scale) of Reinforcement, discussed by Rotter, Seeman, and Liverant (5). This scale was administered primarily to reinforce the comments made to the Ss about the importance of the study in which they were participating. They had been told they were taking part in a special pilot project designed to establish an effective long-range research program on problems of poverty and that they would be required to serve for two more sessions. Use of this measure also provided the opportunity to explore a possible relationship between the personality dimension measured by the I-E Scale and dissonance arousal.

2. Session II

Approximately half the Ss were assigned to the preconsonant (PC) and half to the predissonant (PD) conditions. These groups were equated for the scores on the I-E Scale.

Ss assembled for this session in five separate groups. Two male confederates, previously unknown to the Ss, worked with the experimenter during the first part of the session. The two confederates took turns routinely administering an adaptation of Frenkel-Brunswik's picture discrimination task (4). This procedure was used merely to provide an opportunity for the Ss to become acquainted with the confederates.

The second part of this session consisted of a single dissonant situation for the predissonant Ss and a single nondissonant situation for the preconsonant Ss. In cases where a mixed group of Ss (both PD and PC) arrived for the second session, they were separated at this point, on a pretext of needing more working space.

In the preconsonant condition, *Ss* discussed appointments for the next session, and signed up tentatively for the third session.

The predissonant *Ss* were informed that due to budgetary limitations only one of the two very capable confederates could continue working on the poverty research program, although both would still be present for the third session. The *Ss* were told that their votes would be key factors in making this choice, since one of the most important criteria for selection was how the confederate worked with others and how others react to him. *Ss* were told that the chosen confederate would get excellent experience, salary, and tuition for grade school. The *Ss* were then given three minutes to make independent, signed written decisions.

All *Ss* participated in the third procedure of the session which consisted of the critical repeated dissonance (RD) tasks. The critical problems dealt with specific dilemmas that the *Ss* had to resolve: namely, (a) whether or not to report an instance of cheating on an examination; (b) what should be the appropriate educational placement for several mentally retarded children; (c) how should the plight of an unmarried pregnant student be handled. It was pointed out to the *Ss* that these problems could apply to disadvantaged groups and might in fact be related to poverty conditions. Four groups of *Ss* were homogeneous for the critical task, either PD or PC (Condition I). Two of these groups were homogeneous, either predissonant (PDe) or preconsonant (PCe), for the entire session. *Ss* in the other two groups noted above were mixed for the first procedure of the session, but homogeneous for the critical task. The final group was heterogeneous (both PD and PC *Ss*) for both the first and critical third procedure of the session (Condition II). In this final procedure of the second session, copies of the RD tasks were distributed and then read aloud by *E* to control for differences in reading rates. Each group of *Ss* was sent into individual muslin covered wood frame booths set up in the room. The booths eliminated visual but not auditory cues. While in the booths, the *Ss* made individual decisions on each of the three tasks and evaluated the difficulty they had arriving at each decision. *Ss* were informed that they could use as much time as required to make well thought out decisions. The measure of decision time was the number of seconds elapsing from the time the *S* entered the booth until she returned the forms.

3. Session III

All *Ss* completed the Social Desirability Scale (SD) designed by Crowne and Marlowe (2) which measures need for social approval. This scale was administered for the same reasons as the I-E Scale used earlier: that is, to

TABLE 1
DIFFERENCES BETWEEN MEAN DECISION TIME OF PC AND PD SUBJECTS

PC/PD Ss compared	Mean DT in seconds	N	<i>t</i>	<i>p</i>
PC	497.96	28	1.99+	< .05
PD	386.19	26		

give credence to the procedures and also to explore the possibility of a relationship between intra-S variables.

Ss' comments were then elicited to evaluate the effectiveness of the induction.

C. RESULTS AND DISCUSSION

The results support Hypothesis 1. Ss whose precritical experience was non-dissonant (PC) took significantly longer to complete the RD tasks than those Ss with predissonant experience (PD). See Table 1.

Despite differences in design and dependent variable measures between this experiment and Cohen's (1), PD Ss in both studies showed a decrease in response to a critical dissonance experience. In this study, however, terminal discussion indicated that Ss in both groups were committed to the tasks and that dissonance was not reduced via obligation increase, as was suspected in Cohen's study. Since this possibility was eliminated, the observed decrease in dissonance appears to result from either an increase in tolerance to dissonance as a result of prior exposure to it, or from a heightened sensitivity to dissonance and therefore a need to remove oneself quickly from subsequently dissonant situations. More research is needed to clarify this ambiguity of interpretation and the use of a physiological measure may be indicated. If during the RD task, PD Ss were to show a greater increase in physiological signs of stress than PC Ss (individual Ss' measurement during relaxation would be used as a base), the heightened sensitivity to dissonance explanation

TABLE 2
DIFFERENCES BETWEEN MEAN DECISION TIME OF PC AND PD SUBJECTS
UNDER CONDITIONS I AND II

Conditions compared	Mean DT in seconds	N	<i>t</i>	<i>p</i>
PC Cond. I	554.2	21	2.64	< .05
PD Cond. I	351.3	20		
PC Cond. II	329.3	6	1.44	> .05
PD Cond. II	356.7	7		
PCe	702.5	8	2.63	> .05
PDc	410.6	8		

TABLE 3
MEAN DECISION TIME DIFFERENCE ON RD TASK
OBTAINED BY HI'S AND LO'S ON I-E SCALE

Conditions compared	Mean DT seconds	N	p
Hi's in PD Cond. I	334.2	6	> .05
Lo's in PD Cond. I	311.0	6	
Hi's in PC Cond. II	472.0	5	> .05
Lo's in PC Cond. II	659.0	5	
Hi's, Cond. II	356.7	3	> .05
Lo's, Cond. II	346.8	4	

would be strengthened. Conversely, should a difference in the opposite direction occur, support would be obtained for the increase in tolerance of dissonance explanation.

The experimental findings also support Hypothesis II. The difference in decision time between PC and PD Ss was significant only under Condition I where Ss were homogeneous for the critical task, but not under the heterogeneous Condition II. Moreover, the greatest difference in decision time between PC and PD Ss occurred when group composition was homogeneous throughout the entire session (either PDe or PCe). See Table 2. Thus, Ss (who would potentially differ in their response time because of different pre-critical task treatment) will move toward homogeneity of response interval if working simultaneously in the critical situation.

Position on the I-E and SD Scales did not provide any meaningful determination of response to the dissonant situations in the context of this study. The scores of approximately the upper and lower 25 percent (on the overall I-E Scale distribution for this sample) were used to represent the scores of the

TABLE 4
MEAN DECISION TIME DIFFERENCES ON RD TASK
OBTAINED BY HI'S AND LO'S ON SD SCALE

Conditions compared	N	Mean DT in seconds	p
Hi's in PD—Cond. I	7	445.7	> .05
Lo's in PD—Cond. I	6	253.3	
Hi's in PC—Cond. I	8	542.5	> .05
Lo's in PC—Cond. I	8	477.9	
Hi's in PD—Cond. II	2	365.0	> .05
Lo's in PD—Cond. II	3	350.0	
Hi's in PC—Cond. II	4	332.0	> .05
Lo's in PC—Cond. II	2	338.5	

Hi's and Lo's, respectively. SD scores were dichotomized at the mean (16.2) to yield Hi and Lo scorers.

Possibly the small *N* resulting from use of extreme Hi and Lo Ss obscured potential differences based on personality variables. Or, decision time, which was useful for quantification of dissonance, may not have been sensitive to personality differences. Further investigation should clarify this issue.

D. SUMMARY

The present study examined the effects of differential preliminary dissonance arousal on subsequent repeated dissonance exposure. Decision time on repeated dissonance tasks was used to measure the effects of differential dissonance induction. Conformity pressures were also examined by having Preconsonance Ss and Predissonance Ss complete repeated dissonance tasks separately or simultaneously. The results indicated that both differential dissonance treatments and conformity pressures will affect the magnitude of reaction to repeated dissonance. Decision time proved to be a useful measure in this study and its use is indicated in future dissonance research.

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Box 124

Hunter College of the City University of New York

695 Park Avenue

New York, New York 10021

QUANTITATIVE INFORMATION DIFFERENCES BETWEEN OBJECT-PERSON PRESENTATION METHODS*

University of Calgary, Canada

J. EDWIN BOYD AND RAYMOND P. PERRY

A. INTRODUCTION

Investigators studying social judgments in person perception have employed several techniques to present experimental stimuli to subjects. The interpretations placed on the data associated with different methods of research are often contradictory (2, 3) partly because experimental techniques have been used whose specific effects are not understood. The underlying assumption is that one object-person presentation method is as useful as another; that the outcome of the judgmental process is not subject to intermodal differences.

Jackson (5) has suggested with reference to Kelley's (6) study that judges confronted with a written person-description, or a live person, use a similar inferential process when forming impressions about these object-persons. It is not clear from Kelley's procedure which presentation method, written person-description, or "live" person was instrumental in the subject's judgmental process. Presumably the written communication was responsible for the differential judgments made. If this is so, then the contribution made by the real person is unclear and he is perhaps, superfluous. It does not seem warranted to conclude from this study that social judgments of hypothetical people (written communication) and real people are similar. To conclude this would require a presentation of the written person-description and the real person in isolation, followed by comparisons of social judgments made in the three groups.

Perry and Boyd (10) have made some progress in this direction while studying impression communication accuracy. They found that differential accuracy outcomes were indeed a function of qualitative differences between written or audiotaped presentation methods. Judges in the written condition could decide to reread the person-description information to consolidate their impression; judges in the audio condition did not have this choice as the tape recorder was controlled by the experimenter.

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Perceiver characteristics may be determinants of the amount of information utilized from a particular presentation method. One may expect that judges who are highly motivated to form accurate impressions use more information than judges who are not so motivated. Thus, an interaction between motivational level and method may be expected in the amount of information being used.

The present study examined differences in informational content between presentation methods. Informational content was defined as the number of adjectives endorsed on the Gough adjective checklist (4). It is hypothesized that the VTR presentation method has more information because of both an audio and a visual output; that the written method has more than audio does. Within these methods it is also expected that object-persons may differ in the amount of information they make available. The secondary aim, given that informational differences do exist between methods, was to study the effect of perceiver characteristics, such as motivational level and sex, on the quantity of information utilized in making the judgments.

B. METHOD

1. Subjects

The subjects were 60 paid summer school students at The University of Calgary. Thirty males and 30 females were randomly selected from senior courses.

2. Materials and Procedure

Five object-person interviews were presented to subjects by three methods: a standard 21" television-videotape monitor system (VTR), a tape recorder, and a typed booklet. The interviews involving a map and model-maker, a police officer, a newspaper writer, an English student, and a psychology student were chosen from 28 color films used in Cline and Richards' study (3). The films were transferred to a black and white videotape, reduced to four minutes in length, and separated by a 30-second interval during which the subject was permitted to consolidate his impression of the object-person. The videotape soundtrack was presented in the audio condition; for the written condition the soundtrack was transcribed *verbatim* and presented in a typed booklet.

Two groups of 30 Ss each were formed. Those in the high motivation group were instructed that they would receive a \$15.00 bonus if experienced judges could determine from the adjectives checked which object-person a subject was referring to. Low motivation subjects were merely asked to form

impressions of the object-persons. These motivational groups were equally divided between three presentation methods, VTR, audio, and written. In each presentation subgroup *Ss* were again divided by sex, five males and five females. The six groups—low motivation VTR, audio, and written, and high motivation VTR, audio, and written—received the same five object-person interviews, with only the presentation method varying. Exposure time was balanced in the three presentation conditions by running the videotape and tape recording once only and by restricting *Ss* in the written condition to reading the booklet once through in a given time period.

Ss were instructed to form an impression of each of the object-persons. They were then asked to complete an ACL (4) on two of the object-persons, the map and model-maker, and the police officer, randomly selected by the experimenter, the exact selection being unknown to subjects prior to presentation. The *Ss*' task was to read through the list of 300 adjectives and check off those descriptive of his impression. No limit was placed on the number of adjectives to be checked off. Some subjects were asked to begin with adjective number one, while others started with adjective number 300 to prevent order effects as demonstrated by Warr and Knapper (11).

C. RESULTS

The dependent measure of informational content was simply the total number of adjectives checked off on the ACL. A four-way analysis of variance was used to test the four variables: method (VTR, written, and audio), motivation level (high and low), sex, and object-persons (map and model-maker and police officer).

As hypothesized, the presentation methods produced a differential effect in the number of adjectives checked on the ACL ($F = 3.40, p < .05$). The mean numbers of adjectives checked off within each presentation condition were as follows: audio 48.93, written 62.53, and VTR 65.43. Multiple *t* tests (7, pp. 73-78) were used to determine which means were statistically significant. The number of adjectives checked differed significantly between the written and audio conditions ($t = 1.947, p < .05$) and the VTR and audio conditions ($t = 2.326, p < .05$), but did not differ significantly between the written and VTR groups ($t = .415, p > .05$). It seems that in both the written and VTR conditions no differences exist in the amount of information available to judges; but significantly more information is available than in the audio condition.

Perceiver characteristics, such as motivational level and sex, did not produce any significant results in terms of the information utilized ($F = .08, p >$

.05, $F = 1.52$, $p > .05$, respectively). Nor did any significant results accrue to the interactions of motivational level and method ($F = .20$, $p > .05$), or sex and method ($F = .07$, $p > .05$). As well, object-person differences did not produce significant effects on the information utilized ($F = .48$, $p > .05$).

D. DISCUSSION

Subjects in the three conditions differed in the amount of information they used. Thus it is assumed that different amounts of information are made available by various methods. It may be argued that this is not necessarily so and that informational content is constant, any differences being attributable to cognitive variables. Such an explanation would assume an interaction between cognitive characteristics of the subject and method of presentation. Since no such interaction was found with at least one cognitive variable, perceiver motivation, the more parsimonious view is that information used is reflective of information available.

Perry's data (9) demonstrate the unpredictable results that differential method usage has on impression communication. Judges were exposed to the identical object-persons using the same three methods used here. Presentation time was similarly equated. The judge's task was to write down his impression of each object-person such that another person could match it to the correct object-person. Thus a measure of impression communication accuracy was determined. No main effects were noted between the three methods in terms of differences in accuracy of impression communication.

These results are surprising in view of the data from the present study. One may predict that methods having high information content should enable the judges to communicate impressions more accurately. This was not the case. Equating the three methods for presentation time may have prevented the superior informational qualities of the VTR and written modes from being maximized. The task required the judges to discriminate between the five object-persons. However, judges in the VTR condition are confronted with much more information than those in the limited audio condition. Thus impression formation is made more complex with added information processing requiring more time to organize and to synthesize.

The insignificant result between the VTR and written groups may be attributed to object-person presentations not being equalized temporally in the two conditions. Some subjects in the written group who were rapid readers may have read the booklet more than once in the time it took average readers to go once through the booklet. Hence, some may have accumulated

much more information than the others. One also may speculate that the VTR does have significantly more information than the written method but that subjects limited storage systems retained less than was available. Human information processing models involving memory systems imply that there is a ceiling effect on the amount of information that can be processed (1, 8).

E. SUMMARY

This study examined the amount of information available to judges in three object-person presentation methods—videotape recorder (VTR), tape recorder (audio), and written—as well as quantitative information differences between object-persons. In addition the effect of perceiver characteristics, motivational level (high, low), and sex, on the amount of information used was observed. Judges in each presentation condition were asked to form an impression of each object-person, then complete an adjective checklist (ACL), checking only those adjectives descriptive of their impression.

Information was defined as adjectives ascribed. Significant main effects were found for presentation methods, but not for object-person, motivation level, or sex differences. There were no significant interactions. Thus, judges in the VTR and written conditions checked off significantly more adjectives than those in the audio condition. The influence of different presentation methods on social judgments in person perception research was discussed.

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Department of Psychology

University of Calgary

Calgary 44, Alberta, Canada

THE EFFECTS OF SOURCE IDENTIFICATION ON ATTITUDE CHANGE AS A FUNCTION OF THE TYPE OF COMMUNICATION* ^{1, 2}

Loyola University of Chicago and State University of New York at Oswego

HOMER H. JOHNSON AND RICHARD R. IZZETT

A. INTRODUCTION

Johnson and Scileppi (3) have suggested that source credibility does not affect the attention to, or comprehension of, a persuasive communication. Rather source credibility acts as an evaluative "set" influencing the subject's acceptance or rejection of the contents of the communication. Under high source credibility the arguments presented are generally accepted as valid; however, under low source credibility the arguments are treated with suspicion and counterarguments are generated. This research further indicated that source credibility differences affect attitude change primarily under low ego-involvement conditions. Ego-involvement itself influences the extent to which a message is evaluated critically, and under high ego-involvement conditions a highly critical set is activated that overrules the use of source cues. The purpose of the research presented here is to refine further the use of source cues under low ego-involvement conditions by examining attitude change to high, low, and unidentified sources as a function of three types of communications: plausible arguments supporting the conclusion, implausible arguments supporting the conclusion, and no arguments supporting the conclusion.

It seems reasonable to assume that under low ego-involvement conditions (which constitute a high acceptance set) there is little motivation on the part of the receiver to question the validity of arguments presented by an unknown source. Likewise there is little reason to doubt the validity of arguments presented by a highly credible source. However, if a low credible source would present the same arguments, some degree of critical evaluation would be activated. Thus if arguments related to the conclusion are presented in the message, it is hypothesized that no difference in attitude change to highly credible or unidentified sources should be found; however, there should be

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less attitude change to a low credible source. This effect is hypothesized to be most pronounced when plausible arguments are given than when the arguments do not support the conclusion (implausible condition).

An unsubstantiated communication presents no arguments related to the conclusion and the subject's evaluative process must be slightly different from that suggested in the above paragraph. Source credibility cannot be used to evaluate the validity of arguments presented in the communication. The receiver must now infer the presence or absence of supportive arguments based on the characteristics of the source. If the source is highly credible, the receiver would be willing to assume that some substantiating evidence is available; however, there is little reason to make this assumption if the source is unidentified or of low credibility. Thus for this type of message it is hypothesized that higher attitude change will be elicited by a high credible source than by either a low credible or an unidentified source and no difference in attitude change in these latter two conditions is expected.

A second problem area to be investigated here is the relationship between source credibility and communication recall. The theory of source credibility advanced by Johnson and Scileppi (3) postulates that source credibility does not affect either attention to, or comprehension of, the communication. On the basis of this theory it is hypothesized that no difference in recall of the communication would occur in either high credible, low credible, or unidentified source conditions. An alternative hypothesis [summarized by McGuire (6, p. 198)] suggests that no difference in communication recall between high and low credible sources should be found because under these conditions source credibility is used as a cue to accept or reject the conclusions without the subject really absorbing the argument. Support for this finding can be found in several studies (1, 3, 4) in which high and low credible sources were used. However, this position further states that if the source is unclearly valenced, then the subject would find it necessary to learn and absorb the contents of the communication. This hypothesis is based primarily on the findings of Kelman and Hovland (5) who found higher recall of a communication delivered by a moderate credible source than either a high or low credible source. This latter position would hypothesize higher recall when the source is not identified than when the source is clearly high or clearly low credible.

B. METHOD

1. *Design and Subjects*

Subjects were 126 introductory psychology students at Loyola University who were assigned to one of nine treatments. Subjects received a plausible

implausible, or unsubstantiated communication. The communications were attributed to a high credible, low credible, or unidentified source. There were 14 Ss in each of the nine treatment categories. All materials and manipulations used in this study were similar to those used in previous research in this series. More explicit description and validity checks can be found in Johnson and Scileppi (3).

2. Manipulations

Low ego-involvement conditions were created by telling the subjects that the purpose of the study was to see if the materials used in the booklet are reliable and would be useful in studies that are planned for the future. The high credible source was identified as a committee of medical experts. The low credible source was identified as a medical quack who had served a prison term for running a fraudulent TB clinic. In the unidentified source condition the subjects were told that the source of the communication they were to read would not be identified. The plausible communication was 300 words in length and cited scientific evidence against the use of the chest X-rays for the detection of tuberculosis. The implausible communication was 300 words in length and cited implausible evidence against the use of chest X-ray: e.g., one elderly woman had lost her appetite in recent years and thought it might be related to her taking of a chest X-ray. The unsubstantiated communication was the concluding statement of the other two communications: i.e., chest X-rays should be taken rarely and preferably not at all.

3. Procedure

Subjects received a test booklet, the first page of which contained general instructions. The second page contained a description of the source, and the third page contained the communication. After reading the communication, Ss responded to an attitude questionnaire. Four of the questionnaire items were designed to test attitudes on the target issue. Statements such as "Chest X-rays should be taken regularly and often" were presented, and S indicated his degree of agreement with each statement on a 15-point bipolar scale. On the last page of the booklet the subjects answered a questionnaire designed to assess their recall of the communication. This questionnaire consisted of sentences taken from the communication. Parts of the sentences were omitted and the subjects were asked to recall the missing words or phrases. The instructions to the Ss asked them not to turn back to a previously completed page and Ss were monitored to insure that these instructions were observed.

To insure as random an assignment of subjects to treatments as possible, the

test booklets representing the nine treatments were "shuffled" before they were passed out to the subjects.

C. RESULTS

The dependent variable of concern was the *S*'s posttreatment attitude toward the target issue. It is assumed that the random assignment of *S*s to treatments insures that the *S*s pretreatment mean attitude score for the nine treatments is approximately equal. Any differences in posttreatment attitude can therefore be attributed to the effects of the experimental treatment. Posttreatment attitude was measured on the four 15-point bipolar scales. The range of possible scores is 4-60 with a low score indicating more agreement (attitude change) with the communication. Table 1 reports the mean posttreatment attitude

TABLE 1
MEAN POSTTREATMENT ATTITUDE SCORES FOR SOURCE AND
COMMUNICATION TREATMENTS

Source treatment	Communication			Row mean
	Plausible	Unsubstantiated	Implausible	
High credible source	32.77	37.21	48.86	38.95
Unidentified source	31.14	46.64	47.79	41.86
Low credible source	42.43	48.00	47.04	45.83
Column mean	35.45	43.95	47.24	

Note: The lower the score, the more attitude change.

scores for the nine treatment groups. A 3×3 analysis of variance performed on these scores indicated a significant effect due to communication differences ($F = 14.42$, $df = 2, 117$, $p < .001$), a significant effect due to source differences ($F = 4.65$, $df = 2, 117$, $p < .05$), and a marginally significant communication by source interaction ($F = 2.35$, $df = 4, 117$, $p < .07$). The use of Duncan's Multiple Range Test indicated no significant difference in post-treatment attitude to the unsubstantiated and implausible communication; however, both elicited significantly less change than did the plausible communication ($p < .001$). Analysis of source differences indicated that the high credible source elicited more change than did the low source ($p < .01$), but the unidentified source treatment was not significantly different from either the high or the low credible source. The source effects within communication treatment were analyzed and it was found that for the plausible communication both the high and unidentified source treatments showed more attitude change than the low source treatment ($p < .05$), but these former two treatments did not differ significantly from each other. For the unsubstantiated com-

munication the high credible source elicited more change ($p < .05$) than either the unidentified or low source treatments, and these latter two treatments did not differ significantly from each other. No significant source differences were found in the implausible communication condition.

A control group of 14 Ss responded to the attitude questionnaire without receiving an experimental treatment. The mean attitude score for this group was 47.21. To compare this mean with the treatment means an analysis of variance was performed which included the control group, and between mean comparisons were made by the Duncan test. The control group mean differed significantly ($p < .05$) from the high source-plausible, unidentified source-plausible, and high source-unsubstantiated. No other comparisons reached an acceptable level of significance.

Communication recall was measured by having subjects fill in missing words or phrases of sentences taken from the communication. There were 15 such blanks for the implausible communication and 20 blanks for the plausible communication. No recall test was administered for the unsubstantiated communication. Two methods for scoring recall were employed: (a) Exact Recall in which credit was given only if the subject provided the exact word or phrase used in the communication, and (b) "Approximate" Recall in which credit was given if the word or phrase was provided exactly, or if the word or phrase approximated the exact wording. For example, credit was given if "reproductive organs" was substituted for "sex organs." Two persons independently scored this last measure of recall with $+ .92$ reliability. Subjects' recall scores were converted to percentage of possible correct. Analysis of variance performed on these scores indicated that recall was higher for the implausible communication than the plausible communication when the approximate measure was used ($F = 9.07$, $df = 1, 78$, $p < .01$), and also when the exact measure was used ($F = 3.08$, $df = 1, 78$, $p < .10$). This difference probably reflects the level of difficulty of the message or the recall test. No significant differences in recall were found as a function of message source ($F < 1$) or source by message interaction ($F < 1$) for either recall measure, nor did any trends appear that would indicate higher recall for the unidentified source condition.

D. DISCUSSION

Previous research in this series (3) has demonstrated that source differences in attitude change do not appear under high ego-involvement conditions but have their major effect under low ego-involvement conditions. The results of the present study further clarify this effect under low ego-involvement con-

ditions. Whether a valenced source adds to, or detracts from, the amount of attitude change that would be elicited by an unidentified source apparently depends on the type of communication. For the type of communication in which arguments are presented that are related to the conclusion drawn, the two problems faced by the receiver are (a) to assess the validity of the arguments presented, and (b) to decide the degree of support these arguments provide for the conclusion. The communication source is assumed to affect the former problem but not the latter. The arguments are taken as valid when the source is not identified, as well as when he is identified as high credible. However, the validity of the arguments is questioned when presented by a low credible source. Thus for this type of message the high source does not facilitate change, but the low source detracts from the change that would be elicited by an unidentified source. Our failure to find differences in the implausible condition is assumed to be due to the problem (b) faced by the receiver. Even if the arguments were accepted as valid in the high and the unidentified source conditions, they provide little support for the conclusions drawn and, hence, little attitude change occurred. It is probably also true that subject populations vary as to the extent to which they would find the same arguments as valid, as well as the extent to which they would perceive these arguments as supporting the conclusion. Variables such as intelligence and knowledge of the subject matter are probably of major importance. This is probably why source differences with an implausible communication were found with the use of a high school population (3) but not with a college population [Johnson and Izzett (2) and the present study].

In an unsubstantiated communication, no arguments are presented and the receiver must infer the presence or absence of such. It is here that the high source will have its greatest facilitative effect in attitude change, since some subjects will infer the existence of supportive evidence possessed by an expert in the field. There would be much less of a tendency to infer such if the source is unidentified or of low credibility. It is to be noted that this type of communication is similar to that used in the traditional conformity studies and the same hypothesis would apply here: i.e., a highly credible source (or unanimous agreement of sources) would elicit higher levels of conformity than that obtained with no source or a low credible source.

No significant differences in communication recall were found in the three source conditions for either message which supports the hypothesis that source characteristics act as a cue as to how the communication should be read and not the extent to which it should be read. The data offer no support for the hypothesis that the subject must learn and absorb the arguments presented by an unclearly valenced source. It is quite possible, however that the demand

characteristics of laboratory experiments may negate any confirmation of this latter hypothesis. Laboratory subjects who are presented with a communication probably assume that they are expected to read the communication fairly thoroughly regardless of the source, and the communication recall may reflect this expectation. Other design procedures may have to be devised to allow a more valid test of this problem—perhaps a technique in which the subject is presented with an “overload” of information: e.g., several communications attributed to sources that vary as to the extent which they are clearly valenced.

E. SUMMARY

Subjects read a plausible, implausible, or unsubstantiated communication attributed to a high credible, low credible, or unidentified source under conditions of low ego-involvement. For the plausible communication, attitude change to the low source was less than to either the high or the unidentified source. These latter two conditions did not differ from one another. For the unsubstantiated communication, more attitude change was elicited by the high source than by either the low or unidentified source. These latter two conditions did not differ from one another. No source differences in attitude change were found in the implausible communication condition. No differences in recall of communications were found as a function of source condition.

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Department of Psychology
Loyola University of Chicago
6525 North Sheridan Road
Chicago, Illinois 60626



FOUR-PERSON GROUP CONCEPT ATTAINMENT AS A FUNCTION OF INTERACTION FORMAT*¹

Department of Psychology, Texas Tech University

RICHARD P. MCGLYNN

A. INTRODUCTION

A recent series of studies has adapted the concept-attainment paradigm of Bruner, Goodnow, and Austin (2) to the study of group problem solving. In this situation the subjects select one card from an array varying in a number of attributes with two or more values of each attribute, learn from the experimenter whether or not the card exemplifies the correct concept, and make an hypothesis. This process is repeated until a subject expresses the correct hypothesis. Studies assessing dyadic *versus* individual performance with college students (3, 6) found cooperative pairs required fewer card choices, had fewer untenable hypotheses, and made greater use of the more efficient attribute-testing strategy of focusing. In order to determine the reasons for the superiority of dyads, Laughlin and Doherty (4) compared cooperative pairs of female college students allowed discussion with cooperative pairs not allowed discussion in a factorial design in which memory aids (paper and pencil) were or were not available. Discussing pairs were superior on all but the strategy measure, while the memory manipulation had no effect. Laughlin and McGlynn (5) found cooperative pairs superior on all measures when compared with two competing individuals. Both of these latter studies (4, 5) pointed to the importance of the discussion process in determining the superiority of cooperative pairs.

The results of two experiments (1, 4) have further suggested that the measures of untenable hypotheses and focusing strategy reflect two distinct problem solving processes: a monitoring process whereby individuals check on each other's problem solving, and a strategy process by which the pair formulates an overall problem solving strategy. The present study was designed to extend these previous findings on the effects of discussion and competition to

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four-person groups with the effects of memory controlled. In addition, the subjects were high school students, whereas previous research had been done only with American college students.

B. METHOD

1. *Design and Subjects*

A 3×4 repeated-measures factorial design was used with the variables (a) interaction format (cooperative, competitive-pair, or competitive-individual) and (b) problems (four for each group). Subjects were 216 male high school students from St. George High School, Evanston, Illinois. Eighteen groups of four subjects each were randomly assigned to each of the three experimental conditions.

2. *Stimulus Display and Problems*

The stimulus display was an 8×8 array of $64 \frac{1}{2} \times 4$ inch cards. The 64 cards represented all possible combinations of six colors (attributes), each of which was a plus or minus sign (values). The cards were arranged systematically: e.g., all the blue plus cards were in the top four rows. All problems were conjunctive concepts with three relevant attributes (e.g., "blue plus, green minus, red plus").

3. *Procedure and Formats*

In all conditions two subjects sat on each side of a table containing the stimulus display, while the experimenter sat at the head of the table. The instructions thoroughly explained the nature of the task and the meaning of conjunctive concepts with an example. Each problem started with a given positive card which exemplified the concept. A randomly selected subject then selected a card and the experimenter said "yes, that is an example of the concept," or "no, that is not an example of the concept." The same subject then stated an hypothesis and the experimenter said "yes" or "no" to indicate if the hypothesis were correct. This cycle of card selection, feedback on the selection, one hypothesis, and feedback on the hypothesis was repeated with the subjects rotating as card-selector until a subject expressed a correct hypothesis which solved the problem.

The three formats for interaction were as follows: (a) cooperative: the four group members were instructed to cooperate in solving the problems by discussing each card choice and accompanying hypothesis, but individuals rotated in announcing the group choices; (b) competitive pairs: pairs on each

side of the table were told that they were competing with each other and that the object was to solve the problem before the other pair. Pairs alternated in selecting cards, and within each pair individuals alternated in announcing each card choice and accompanying hypothesis after discussion with the partner; (c) competitive individuals: the four group members were told they were all in competition with one another and that the subject was to solve the problem before any of the others. Individuals did not discuss the problems and rotated in selecting cards and making the accompanying hypothesis. In all conditions, a different subject was asked to start each problem. The memory variable was controlled by removing each selected card to an area of the table designated "examples" or "nonexamples."

C. RESULTS

The mean number of card choices to solution, untenable hypothesis ratio, and focusing strategy for each of the four problems and totals are given in Table 1.

TABLE 1
MEAN CARD CHOICES TO SOLUTION, UNTENABLE HYPOTHESIS RATIO, AND
FOCUSING STRATEGY FOR FOUR PROBLEMS AND TOTALS

Card choices	1	2	3	4	Total
Competitive-individual	6.7	7.2	6.8	8.1	28.8
Competitive-pair	6.6	6.1	6.0	5.3	24.1
Cooperative	4.3	4.3	4.8	5.4	18.8
Total	17.6	17.6	17.6	18.8	
Untenable hypothesis ratio					
Competitive-individual	.55	.59	.45	.51	2.10
Competitive-pair	.49	.45	.41	.40	1.75
Cooperative	.26	.27	.33	.21	1.14
Total	1.30	1.31	1.19	1.19	
Focusing strategy					
Competitive-individual	.25	.15	.36	.25	1.02
Competitive-pair	.32	.45	.42	.43	1.63
Cooperative	.55	.50	.53	.53	2.11
Total	1.10	1.10	1.31	1.21	

1. Number of Card Choices to Solution

The effect of format was significant, $F(2, 51) = 5.36, p < .01$. By Duncan multiple-range comparisons cooperative groups required fewer card choices than four competing individuals ($p < .01$), while competitive pairs did not differ significantly from either extreme. Neither the effect of successive problems nor its interaction with format was significant, $F < 1$.

2. *Untenable Hypotheses*

An hypothesis which contradicted available information in any way was considered untenable (3). The total number of untenable hypotheses was divided by the total number of hypotheses less one (i.e., the correct hypothesis was not counted) to obtain the untenable hypothesis ratio. The effect of format was significant, $F(2, 51) = 5.00, p < .05$. Duncan multiple-range tests revealed that the cooperative format resulted in a lower untenable hypothesis ratio than competitive pair ($p < .05$) or competitive-individual ($p < .01$) formats which did not differ significantly. Neither the effect of successive problems nor its interaction with format was significant ($F < 1$).

3. *Focusing Strategy*

A card choice which obtained information on at least one new attribute and which was accompanied by a tenable hypothesis was counted as an instance of focusing. [For complete scoring rules see (3).] The total number of such instances was divided by the total number of card choices on the problem to give a continuous focusing score from .00 to 1.00. The effect of format was significant, $F(2, 51) = 4.93, p < .05$. By Duncan multiple-range comparisons four competing individuals employed significantly less focusing than either competitive pairs ($p < .05$) or four cooperative individuals ($p < .01$) which did not differ significantly. The effect of successive problems was nonsignificant ($F < 1$), but the problems \times format interaction was significant, $F(6, 153) = 3.00, p < .01$. The form of this interaction revealed that it was the result of stabilization of performance after the first problem by cooperative groups and competitive pairs relative to competing individuals.

D. DISCUSSION

The basic result was that on all measures the rank order of problem solving effectiveness was four cooperative individuals, competing pairs, and four competing individuals. On the basic product measure of card choices to solution, performance decreased linearly with degree of competition, but only the difference between total cooperation and total competition was significant.

With regard to the proposed problem solving processes, the results for the untenable hypothesis ratio suggested that the superiority of total cooperation was due to the monitoring process, while the results for focusing suggested that the inferiority of four competing individuals was due to the strategy process. In other words, two competing pairs did not differ from the two other kinds of groups on the basic product measure because they behaved more like four

cooperative individuals in developing an overall strategy, but behaved more like four competing individuals in monitoring available information. These results lend further support to the distinction (1, 5) between the monitoring and strategy processes as indicators of how groups achieve their product.

The present study extends previous findings on the facilitating effects of discussion (4) and cooperation (5) in dyads of college students. However, these results are somewhat in conflict with the finding of Laughlin and Doherty (4) that discussing and nondiscussing pairs differed on the untenable hypothesis measure but not on the strategy measure. In this experiment the nondiscussing group (competitive individuals) differed from the partial discussion group (competitive pairs) on the strategy measure but not on the untenable hypothesis measure. This discrepancy may be due to the difference in samples (college women *versus* high school boys), the lack of a competitive format in the Laughlin and Doherty study, or the effects of a larger group. Likewise either the differences in educational level or group size may account for the failure of this study to replicate the previously demonstrated (5, 6) significant improvement over problems.

E. SUMMARY

Fifty-four groups of four high school students each solved four concept-attainment problems in one of three randomly assigned conditions of interaction format: cooperation, competitive pairs, or competitive individuals. On the basic measure of problem solving product (number of card choices to solution) performance decreased linearly with degree of competition, but only the difference between total cooperation and total competition was significant. For one measure of problem solving process (untenable hypothesis ratio) the cooperative format resulted in a lower untenable hypothesis ratio than competitive-pair or competitive-individual formats which did not differ significantly. On the other measure of problem solving process (focusing strategy) competing individuals employed significantly less focusing than either competitive pairs or four competitive individuals which did not differ significantly. Results were interpreted as extending previous findings on the facilitating effects of discussion and cooperation in dyads.

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Department of Psychology

Texas Tech University

P.O. Box 4100

Lubbock, Texas 79409

COMMUNICATING IMPRESSIONS OF PEOPLE:
A METHODOLOGICAL STUDY
OF PERSON PERCEPTION*¹

The University of Calgary

RAYMOND P. PERRY AND J. EDWIN BOYD

A. INTRODUCTION

Person perception is an interpersonal behavioral pattern which, like perception, enables a meaningful organization of the social milieu. Impression formation is an evaluative aspect of this phenomenon in which individuals make social judgments concerning the perceived persons. Typical research introduces object-persons via written, audio, and pictorial methods to subjects acting as judges. That is, subjects are exposed to an object-person and asked to form an impression of the hypothetical individual. The judge writes down his impression, or checks off those adjectives from a list that correspond to his judgment. The purpose of this study is to compare two methods of object-person presentation and to observe the communicative aspect of impression formation.

Researchers have not attempted a systematic analysis of the relationship between the methods of object-person presentation and the impression formation process. Asch (1) studied the effect of trait lists on impression formation. He demonstrated not only that subjects could make social judgments based on a list of adjectives, but that their impressions could be altered qualitatively simply by changing certain traits. Kelly (8) introduced the object-person in person and also via a written message. He found that merely manipulating a bipolar adjective, warm-cold, produced a noticeable change in impressions along with a marked behavioral interaction difference.

Some researchers (2, 12, 13, 14) have presented the judges with pictures of the object-persons. Still others have used written person-descriptions (3, 9). Recently, a seemingly more life-like method has been employed in which the object-person is introduced to the subjects via a movie or video tape recorder (5, 6, 11). These research techniques do not seem to be qualitatively

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alike in simulating conditions conducive to impression formation. Yet no systematic approach has originated to determine which parameters of these methods are most useful to the investigation of this phenomenon. Thus, it is important to demonstrate that different methods do not produce similar judgmental conditions and results cannot therefore be easily compared across studies.

An additional aim of this study was to introduce an experimental paradigm for the investigation of impression communication. Impression formation and communication are closely linked. The basis of this relationship is linguistic in which a language structure functions for the communication of semantic labels. Person perception is comparable to perception generally wherein linguistic signs are applied to actions, events, and stimuli in the environment. In impression formation the labels are the social judgments, implicit verbalizations based on the attributes of the individual perceived. The communicative aspect involves storing this information, or transmitting it to other individuals. At any rate, a communication is made, either to oneself or to others.

The ICP has a noticeable resemblance to some models postulated in the area of Information Theory (e.g., 7). Information theory concepts such as encoding, decoding, input, output, channels, and communication are readily adaptable to impression formation in a social context. An encoder, also known as a judge or perceiver, is that subject whose task is to form an impression of an object-person. Decoders are those subjects whose task is to match encoders' social judgments (messages or communications) to the proper object-persons. Accuracy of impression communication is the dependent measure: that is, the degree to which a judge is able to communicate to a decoder his impressions of the target persons.

The interpersonal communication paradigm (ICP) used to examine impression communication is based on two earlier studies. Maclay and Newman (10) conducted an experiment in which accuracy of communication was studied. A list of geometric figures was provided to both judge and experimenter, the judge being asked to describe various types of figures. Accuracy was found to be both a function of positive and negative feedback and stimulus category. Boyd (4) observed the ability of judges to transmit social judgments of hypothetical object-persons to other individuals with the use of a paradigm like Maclay and Newman's, although accuracy was not used as a dependent measure. He found that impression communication was directly related to context coding: that is, judges who received all 10 descriptions at once before forming their impressions communicated them more efficiently

than those who were exposed to the object-persons one at a time and asked to make a judgment.

The purpose of this experiment is to determine which method of information (object-person) presentation, audio or written, facilitates accurate impression communication in the ICP.

B. METHOD

1. *Subjects*

The *Ss* were 60 paid volunteers from The University of Calgary and Foothills Hospital nursing school.

2. *Materials and Procedure*

The stimuli were eight object-person descriptions originated by Boyd (3). The object-persons were introduced to the *Ss* by means of interview summaries supposedly composed by "experts in human relations" who had interviewed each of the object-persons. The descriptions varied from 74 to 94 words and included primarily beliefs, behaviors, and occupations of the object-persons. Exposure to the object-persons was determined according to written or audio presentation methods. The interview summaries in the written condition were presented in a booklet, one description followed immediately by another. For the audio condition, the *E* prerecorded the interviews on a tape recorder for presentation.

The *Ss* were randomly assigned to two groups, encoders and decoders, which were further partitioned into subgroups. The 20 *Ss* classified as encoders were equally divided between audio and written object-person presentation conditions. Instructions provided to the *Ss* outlined the experiment and explained that the task would be to form an impression of each object-person presented either in a typed booklet or on a tape recorder. Following exposure, the *Ss* were asked to write down their impressions of each object-person such that another individual could identify who was being described. The 80 impressions produced by each group of encoders were arranged in two booklets, A being the reverse of B, to prevent order effects when distributed to the decoders.

Messages were decoded by 40 *Ss* who first received either a written or an audio introduction to the object-persons. The decoder's task was to identify the object-person denoted by each message. Accuracy of communication was the degree to which decoders could match the correct object-person to the encoded messages. The encoders were equally divided into four groups of 10 *Ss*, two groups being exposed to a written presentation and two to an audio

presentation. Impressions encoded under the written condition were issued to one group of decoders previously introduced to the object-persons via the typed booklet and to a second decoding group that earlier received an audio object-person presentation. Encoded audio impressions were administered to another audio decoding group and to another written decoding group. Thus, the impressions were encoded under two conditions, written and audio, giving rise to the following decoding groups: written encoding-written decoding; written encoding-audio decoding; audio encoding-audio decoding; audio encoding-written decoding.

C. RESULTS

The three independent variables—encoder, decoder, and object-person effects—were subjected to a three-way factorial analysis of variance. Significant main effects were found for presentation mode for both encoders and decoders (Table 1). The group mean errors for impression communication

TABLE 1
SOURCE TABLE OF THE THREE-WAY ANALYSIS OF VARIANCE OF ACCURACY SCORES

Source	SS	df	MS	F
1. Between subjects	730.00	19	38.44	—
2. A (presentation mode-encoders)	472.90	1	472.90	39.12*
3. Subj. w. groups	257.10	18	14.28	—
4. Within subjects	1996.60	300	6.66	—
5. B (object-persons)	177.73	7	25.39	3.23
6. AB	80.12	7	11.45	1.48
7. B \times subj. w. groups	976.25	126	7.75	—
8. C (presentation mode-decoders)	232.90	1	232.90	181.95*
9. AC	152.60	1	152.60	119.22*
10. C \times subj. w. groups	23.03	18	1.28	—
11. BC	47.61	7	6.80	2.86
12. ABC	51.88	7	7.41	3.11
13. BC \times subj. w. groups	300.48	126	2.38	—
14. Total	2726.60	319		

* $p < .001$.

were as follows: written encoders-written decoders, 3.64; written encoders-audio decoders, 6.73; audio encoders-written decoders, 7.45; audio encoders-audio decoders, 7.78. Errors of impression communication are significantly reduced ($p < .001$) when a written rather than an audio presentation method is used to introduce object-persons to the encoders. Similarly, written as opposed to audio object-person presentation minimizes error rate for the decoders' matching task.

The significant encoder presentation method \times decoder presentation method (AC) interaction ($p < .001$) provides useful information concerning the interpersonal communication paradigm (Figure 1). Multiple t tests were used to compare the six possible combinations of group means. The written

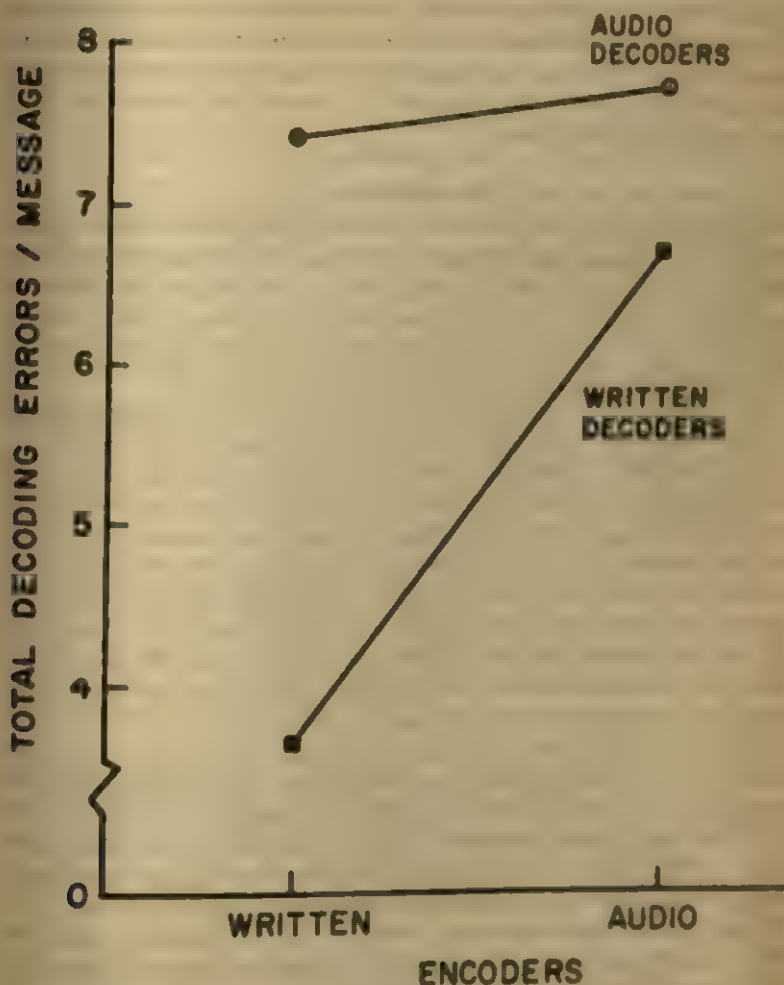


FIGURE 1
INTERPERSONAL COMMUNICATION ERRORS AS A FUNCTION OF PRESENTATION

encoder-written decoder group differed significantly from the written encoder-audio decoder group ($t = 2.962, p < .01$), the audio encoder-written decoder group ($t = 3.065, p < .01$), and the audio encoder-audio decoder group ($t = 3.939, p < .01$). However, the written encoder-audio decoder, audio encoder-written decoder, and audio encoder-audio decoder groups were not significantly different from each other. It appears that audio object-person presentation in any combination was not conducive to accurate impression communication. Conditions most suitable to accurate impression communication were optimal when object-persons are presented to both encoders and decoders via a written method.

D. DISCUSSION

The comparison of two methods of object-person presentation has revealed that not all techniques are identical, nor should they be considered so. The results in this case are defined in terms of the interpersonal communication paradigm in which accuracy of impression communication is the dependent measure. It was demonstrated that presentation method was important for both encoders and decoders.

The dramatic difference observable between the written encoding-written decoding group and the audio encoding-audio decoding group raises an important question as to the superiority of written as opposed to audio object-person presentation. The nature of the written method permitted both encoder and decoder to peruse the information as often as was necessary. The tape recorder, however, presented the information once only. For the impressions to be accurate and discriminable, more time and consideration must be devoted to their formulation due to the large amount of information to be processed. The written method made this possible, whereas the audio did not. Because the subject was able to consolidate the information in the written condition, impression communication was facilitated.

The consolidation effect has serious implications for impression formation research. Many experiments have used several methods to introduce the object-persons, such as a voice recording coupled with a picture, or as in Kelley's (8) study, the real person in addition to a written message. The results of the present study suggest that methods permitting information consolidation contribute more to the impression formation process. Accordingly, the written information in Kelley's study may have been the critical factor, the object-person himself contributing very little to a subject's impression. Because of this intermodal difference, care should be taken to ensure which method is responsible for the impression formation. If not, confounding between methods may occur.

The results also suggest that the interpersonal communication paradigm has merit for the investigation of the impression formation process. It may be questioned as to why decoders must be included in the design. The answer is twofold: First, an integral part of the formation of social judgments is the communication of these to other sources. Second, forming an impression is not unlike the process of concept-formation. The impression communication process might be considered analogous to the process of transmitting concepts from person to person.

In a like manner it is important to note the inclusion of the written encoding-audio decoding and audio encoding-written decoding groups in the experimental design. These groups were used in an attempt to determine the exact source of variance in the ICP: that is, to determine which part of the system is the most important, input or output. The written encoding-written decoding group is significantly superior to the remaining groups, indicating that audio presentation is a severe limitation; so much so, that even permitting decoders the use of the more successful written method does not significantly increase accuracy. It might be hypothesized that if input is not successful, there is no possibility of being successful at the output stage. Two other points also emphasize the essential role of input variables in this experiment. The decoders were randomly assigned and therefore differences are a function of the experimental manipulation of the encoder. Also, manipulating the source of input produces a profound effect on output, although the decoding groups were identical.

Differences existing between decoders may influence the outcome of accuracy to a degree, but by far the greatest influence in this system occurs at the point of input. The results indicate that in a communication system of this type, accuracy is basically a function of input. Thus, when considering which variables do affect accuracy of impression communication, the manipulations should be made at the point of input.

These results suggest that written information has a distinct effect on the impression formation process. Specifically, written as opposed to audio information facilitates accuracy, perhaps because the subject is permitted to return to the original information several times in order to consolidate the impression. This consolidation effect suggests that previous studies employing written and visual information were confounded, as efforts were not made to determine the effect of several information sources. It is thus clear that methods of object-person presentation are not equivalent. This study demonstrated that the differences are at a basic level, the physical presentation of the object-person. The possibility that information output also varies greatly between methods is equally important.

E. SUMMARY

This study examined the accuracy of communicating social judgments from one person to another. An interpersonal communication paradigm was used in which a judge formed an impression of a hypothetical object-person and transmitted the judgment to a decoder. Information regarding eight object-persons was presented to encoders and decoders either in a written booklet, or on a tape recorder. Accuracy of communicating the impressions was the degree to which a decoder matched each judgment with the correct object-person. Impressions generated from written information were transmitted more accurately than those based on audio information. The encoder \times decoder interaction supported the contention that the interpersonal communication paradigm functions not unlike other information processing systems. Although accuracy was influenced by both encoders and decoders, the critical determinant was the input of the encoder. These results suggest the importance of consolidation and memory factors in impression formation research.

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Department of Psychology

University of Calgary

Calgary 44, Alberta, Canada



THE EFFECTS OF CONNOTATIVE MEANING ON THE LEARNING OF NAMES*¹

Ohio University

JAMES L. BRUNING

A. INTRODUCTION

Previous scaling research (1) has indicated that there are differences in the connotative meanings of given names. The present research was designed to determine whether name learning would be affected when the names differed markedly in connotative meaning. The scale dimension of like-dislike was used as the source of names, since it tends to be more inclusive than the dimension of masculine-feminine or active-passive.

The research was conducted as three separate studies, each related to a different aspect of the problem. Since the scale values of male names tended to be more consistent, only male names were used in the following experiments.

B. EXPERIMENT I

In Experiment I the basic question was whether a list comprised of disliked names would be more difficult to memorize than a similar list comprised of well liked names.

1. Method

The Ss were 32 freshmen enrolled in introductory psychology courses at Ohio University.

The Ss were divided into two groups, half learning a list composed of 13 disliked names; half learning a list of 13 which were liked. The names for both lists were chosen on the basis of the scale values previously reported by Buchanan and Bruning (1). The names were presented serially at a two-second rate and Ss were required to learn them, in order, to a criterion of two perfect recitations of the entire list. All Ss were read a standard set of instruc-

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¹ The author wishes to thank Barbara Buchanan, Morris Morgret, Jack Haney, Miller Makey, and Robert Muchleisen for aid in conducting and analyzing the results of the following studies.

tions. A different serial order was presented to each *S* to eliminate the possibility of consistent associations between adjacent names.

2. Results

The results of Experiment I were recorded in terms of total number of errors and the number of trials to learn to criterion. These results showed that there was a slight tendency for the liked names to be learned with fewer errors ($\bar{X} = 104.1$ vs. 121.3), but this difference was not significant ($t = 1.06$, $df = 30$). Comparison of the number of trials to learn to criterion also revealed no significant difference ($t = 1.43$, $df = 30$) although the tendency was for liked names to be learned faster ($\bar{X} = 22.1$ vs. 25.1). For both liked and disliked names the typical serial position curve was noted with most errors occurring in the middle of the lists.

C. EXPERIMENT II

The results of Experiment I indicated that connotative differences (like-dislike) had no significant effect on the learning of a list of names. This would suggest that the connotative meanings of names did not affect learning in the same way that meaningfulness affects the learning of adjectives and nonsense syllables. In Experiment II a modification of procedure was used to determine if differences in connotative meanings may indeed affect learning but that this effect depends upon the context of the names.

1. Method

The *Ss* for Experiment II were 32 freshmen, again drawn from introductory courses.

In Experiment II, the "liked" list of Experiment I was used except that the "disliked" name "Cecil" was placed at position 8 of the 13-name list. The same serial learning procedure was employed as in Experiment I. As in Experiment I the names (except for the isolate, "Cecil") were randomized for each *S*.

2. Results

The results of the experiment showed an isolation effect to the name "Cecil" which was imbedded in the list of well liked names.² Comparison of the number of errors made to "Cecil" ($\bar{X} = 6.0$) vs. the errors made to the

² The mean number of errors for Experiment II were as follows: Item #1 = 1.2, #2 = 2.6, #3 = 4.1, #4 = 5.3, #5 = 7.8, #6 = 8.5, #7 = 9.8, #8 (Cecil) = 6.0, #9 = 10.1, #10 = 9.7, #11 = 9.1, #12 = 7.5, and #13 = 6.5.

immediately adjacent names ($\bar{X} = 9.8$; $\bar{X} = 10.1$) showed the differences to be significant ($t = 4.81$; $t = 5.20$, $df = 31$). The mean overall number of errors was 88.3 and the mean number of trials required to learn the entire list was 18.6.

D. EXPERIMENT III

In Experiment III the procedure was further modified to bring the learning of names closer to everyday experience. In this experiment, *Ss* were required to learn to associate names with photographs in a paired associate fashion where the picture of a person served as the stimulus and the name served as the response to be learned.

1. Method

The *Ss* for Experiment III were 28 freshmen drawn from introductory classes.

The method used in Experiments I and II was altered so that instead of requiring *Ss* to memorize a serial list of names, *Ss* in Experiment III were presented with a series of pictures and had as their task the memorization of the name of the individual pictured. The photographs were candid portraits of males who ranged from college to middle age and were from all walks of life. The individual portraits were rephotographed onto a 16-mm film strip so that they could be presented by a Dunning Anamatic filmstrip projector. The study-test method of presentation was used. On each study trial, the pictures were presented at a two-second rate with a name superimposed across the bottom. A four-second intertrial interval was used. On the test trials *Ss* were shown only the pictures and their task was to identify each individual by name. Study and test trials were alternated until each *S* had learned to a criterion of two correct identifications of all of the photographs. *Ss* were required to learn a total of 19 picture-name associations. All names, with the exception of "Cecil" were high preference names.

The names and photographs were again randomized to eliminate idiosyncratic associations. The name "Cecil" was always placed at position 11, but the photographs associated with that name were randomized to eliminate association of the name with a particular picture.

2. Results

Initially, the same 13 names were used as in Experiment II. However, it became apparent that the presence of the photographs as stimuli made the task extremely easy, since all but one of the first 10 *Ss* had learned to criterion in

four trials or less (*vs.* a mean of 18.6 for learning the same list of names in Experiment II where no pictures served as stimuli). Consequently, six additional picture-name pairs were added so that each of the 28 Ss used in Experiment III was required to identify 19 photographs. The results showed that learning to criterion still took a mean of only 5.6 trials. Although the data were more irregular than those to Experiment II, fewer errors were made in identifying "Cecil" than for any except the initial photograph.³ A comparison of the number of errors made to "Cecil" ($\bar{X} = .7$) *vs.* the adjacent names ($\bar{X} = 1.3$; $\bar{X} = 1.4$) showed the differences to be significant ($t = 2.10$; $t = 2.45$, $df = 27$). The mean number of total errors was 24.7 *vs.* 88.3 in Experiment II.

E. DISCUSSION

The results of this series of studies suggest several conclusions regarding the learning of names. On the basis of the results of Experiment I it can be concluded that connotative differences in meaning did not affect learning lists of names in the same fashion that meaningfulness affects memorization of words and nonsense syllables. The most reasonable explanation for the lack of a significant difference appears to be one which incorporates the variables of frequency and intralist similarity. On the basis of frequency the liked names would be expected to be learned faster. This has been noted in other learning studies using nonsense syllables (3, 1960, Chap. 4). However, intralist similarity (2) may have also affected the results by causing interference within the liked lists and thus offsetting the advantage of greater frequency. Review of the scaling data of Buchanan and Bruning (1) revealed that the names on the liked list were not only rated highly on that dimension, but were also consistently rated as active and masculine. Thus, the liked names tended to have a high degree of similarity of connotative meaning on all three dimensions. The disliked names, however, tended to be more heterogeneous with respect to the other scale dimensions. For example, while the names Elmer and Arlie were both disliked, Elmer was rated as relatively masculine and active, while Arlie was feminine and passive. Thus, greater differences among the connotations of the disliked names may have reduced the intralist interference and offset the tendencies for poorer learning due to the lower frequency of the disliked names.

³ The mean number of errors for Experiment III were as follows: Item #1 = .5, #2 = .9, #3 = 1.7, #4 = 1.4, #5 = 1.3, #6 = 1.7, #7 = .9, #8 = .9, #9 = 1.5, #10 = 1.3, #11 (Cecil) = .7, #12 = 1.4, #13 = 1.4, #14 = 1.6, #15 = 1.6, #16 = 1.4, #17 = 1.6, #18 = 1.5, and #19 = 1.4.

In Experiment II a disliked name imbedded within a list of liked names was clearly learned faster. Many currently popular singers and musical groups are, of course, attempting to capitalize on this phenomenon by choosing highly unusual names. A second finding which offers support for the suggestion that interference impaired the learning of the liked list in Experiment I was that the inclusion of a disliked name reduced the number of errors and trials required to learn the list used in Experiment II. Postexperimental interviews with the *Ss* indicated that the presence of "Cecil" not only led to the rapid learning of that particular name, but also served as an "anchor" so that *Ss* could learn the list as two discrete parts and not have to memorize the entire list of highly similar names: i.e., *Ss* reported that the isolate reduced the homogeneity and permitted them to keep the two parts of the list separated.

In Experiment III, the findings generally supported those of Experiment II, since "Cecil" was identified more quickly than the other photo-name pairs. It is of interest to note that *Ss* reported very little interference when learning to associate a relatively large number of names with photographs. Most *Ss* indicated that they picked some salient feature of the photograph and used that as a mnemonic to associate with the name. Of particular interest were the postexperimental comments regarding the learning of "Cecil." Nearly all *Ss* reported that they did not pick out some salient feature as in the other pictures, but rather remembered "Cecil" because "the guy in the picture looked like a Cecil" or, conversely, "remembered that one because the name didn't fit." Although based on postexperimental interviews, these findings do suggest that *Ss* had a clear stereotype of the name "Cecil" and this was then viewed as either fitting or not fitting the photograph.

It is of interest to consider the possible implications of the above finding in terms of suggesting additional research to determine the actual degree of stereotyping. If photographs were initially scaled with respect to degree of such a characteristic as masculinity-femininity, then it would be expected that names varying in connotative meaning along that dimension would be matched to the photographs significantly better than chance level. In carrying this reasoning an additional step, it might also be expected that a list of photograph-name pairs, where the names and the photographs match would be easier to learn than a list comprised of the same names and photographs, but where they were randomly ordered.

F. SUMMARY

Three experiments were conducted to determine the effects of connotative meaning on the learning of names. The results indicated that connotative

meaning did not affect the learning of lists of names, but that a disliked name imbedded within a list of liked names was learned faster. Additional results indicated that learning of photograph-name pairs was much easier than learning lists of names.

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Department of Psychology

Ohio University

Athens, Ohio 45701

EXPOSURE TO OTHERS, NEED FOR SOCIAL APPROVAL, AND REACTIONS TO AGREEMENT AND DISAGREEMENT FROM OTHERS¹

Cornell University and State University of New York at Buffalo

STEPHEN C. JONES AND RONNA TAGER

A. INTRODUCTION

The evaluations people make of one another's actions in a variety of everyday social encounters have a clear impact on the perceptions and behaviors of the individual receiving them. For example, in laboratory studies conducted with undergraduate students, a subject receiving positive evaluations from a group of his peers was more active in the group, more likely to increase his self-evaluation, and more favorable in his appraisals of others than an individual receiving negative evaluations (16, 17). To some extent the influence of interpersonal evaluations may result from their *informational value* for the individual (*cf.* 3, 9, 15, 23). This notion seems particularly useful in explaining why the individual adjusts his self-evaluation to the group's level of praise; in effect, he learns about his own level of competence from the evaluations of the group. However, many of the results involving interpersonal evaluations are more readily explained by assuming that evaluations also have *hedonic value* for the individual. In most social situations people undoubtedly prefer praise, agreement, and other forms of approval to indices of social disapproval. If expressions of approval are rewarding and expressions of disapproval punishing, then the social exchange theories of Thibaut and Kelley (25) and Homans (14) can account for, first, why the individual reciprocates in his evaluations of others by agreeing with others who agree with him and disagreeing with those who disagree with him (16) and, second, why he participates more in group discussions when others support his statements than when others are nonsupportive (17).

An important question posed by this analysis is what variables affect the reward value of approval and the punishment value of disapproval. This question has already received some attention in the social psychological literature. For example, individual differences in self-evaluation (8, 16, 26) and need for

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approval (20, 24)—whether the level of praise represents a gain or loss in esteem (2), whether or not the individual feels he must “live up to” the level of praise he accepts for himself (18, 19), and whether the evaluations are received from friends or strangers (11, 12)—have all been found to affect reciprocity in social exchange and interpersonal attraction.

The present investigation focuses on the *degree of exposure* an individual has to his group prior to participating in a social exchange. The assumption is that degree of exposure will be directly related to both the reward value of social approval and the punishment value of social disapproval. Simply stated, an individual is more sensitive to the evaluations of others who “know” him than to others who “don’t know” him. There were three reasons for this conjecture. First, if an individual has been exposed to his peers, then he is more likely to think their appraisals of his opinions are biased by their more general impressions of him. In effect, after some personal exposure, the individual may view the evaluations of others as contingent on more aspects of himself than his immediate activities. Second, the work of Homans (13), Deutsch and Collins (7), and more recently Zajonc (27) suggests that exposure to others increases their attractiveness and, presumably, their approval and disapproval becomes more important to the individual. Finally, the evaluations of others which are based on more information about the individual being evaluated may be viewed by him as being more stable indices of approval and disapproval. This perception of stability may well enhance the satisfaction of being approved of and the frustration of being disapproved of. The main hypotheses of the present study was derived from this analysis: *In a condition of prior exposure to others, the individual is more likely to agree with others’ opinions when they agree with him, and to disagree with others’ opinions when they disagree with him as compared to a condition of no prior exposure to others.*

A second purpose of this project was to examine further the effects of individual differences in need for social approval (6) on reciprocity in a social exchange situation. Previous research indicates that under some experimental conditions this individual difference variable affects reactions to agreement and disagreement from others. Jones and Schneider (20) found that when subjects were made uncertain of their own ability appraisals, the need for social approval was positively related to reciprocity in a social exchange in which one group member was positively evaluating the subject and another group member was negatively evaluating the subject. Similarly, Shrauger and Jones (24) obtained evidence that the need for approval was correlated with differences in the attractiveness of a peer who agreed with the subject

versus one who disagreed. The assumption that reactions to social agreement and disagreement involves a preference for approving as compared to disapproving evaluations was supported by these findings and led to the second hypothesis: *An individual with a high need for approval is more likely to agree with others' opinions when they agree with him and to disagree with others' opinions when they disagree with him as compared to an individual with a low need for social approval.*

B. METHOD

1. Subjects

Forty male undergraduates enrolled in the introductory psychology courses at the State University of New York at Buffalo participated in this experiment as part of their course requirement. Subjects were run four at a time in sessions lasting approximately 1½ hours. Before the experiment began, each subject filled out the Marlowe-Crowne Social Desirability (MCSD) scale.

2. Procedure

After subjects were seated around a table, the experimenter explained that the purpose of the study was to obtain normative data for a group-administered measure of social sensitivity called the Feldman-Collier Personality Inference Inventory. Each item on this fictitious inventory consisted of two value statements containing answers and one unanswered value statement, as illustrated in the sample item:

1. undecided: Avoid depending upon other persons and things.
2. true: Truth existed before man.
3. _____: It's a wonderful feeling to sit surrounded by your possessions.

The subject's task was to draw inferences about the kind of person whose answers were represented in the item, then to predict whether that person's response to the unanswered statement was "true," "undecided," or "false." The experimenter stated that there were no right or wrong answers for the items and that predictions would be a matter of personal opinion.

a. *Manipulation of prior exposure.* After the purpose of the experiment and the nature of the inventory were explained, a sample inventory was given to each subject. In the Low Exposure condition, subjects ($N = 20$) were instructed to work on the sample items alone. In the High Exposure condition, subjects ($N = 20$) discussed the sample items among themselves. An assistant²

² Our thanks to Emily Aleyner for her assistance in the conduct of the experiment.

to the experimenter participated in this discussion and attempted to keep the discussion informal and congenial so that subjects would be more willing to express themselves when called upon. In both conditions the experimenter's assistant was present throughout the course of the experiment, and the time spent reviewing the sample items was 10 minutes.

During the major phase of the experiment subjects took turns giving aloud their opinions on different items of the Feldman-Collier Inventory and exchanging evaluations concerning their agreements and disagreements with one another's opinions. The rationale provided for this procedure was that since there were no objective right or wrong answers, the criteria being developed for scoring the inventory involved reference group comparisons. The subjects were seated in separate cubicles which visually isolated them from one another, and their exchange of agreements and disagreements was conducted by way of an electrical signalling apparatus. In front of every subject was a panel with three columns, each column containing one green light and one red light for receiving evaluations from peers and one double-throw switch for sending evaluations to peers. The circuitry from these four subject panels fed into a master control panel which allowed the operator to record from Mercury counters the evaluations sent by each subject and to feed back to subjects by means of double-throw switches a prearranged schedule of green and red lights.

The experimenter called on subjects one after another to answer a single item until each subject had answered 10 different items, which made a total of 40 different items per session. After a subject had given his answer, each other subject expressed either agreement by throwing his switch up to turn on a green light, or disagreement by throwing his switch down to turn on a red light. A "trial" was defined by each of the four subjects answering an item and being evaluated by the others. There were 10 trials which were divided, *a priori*, into two blocks of five trials each. During these blocks of trials the green and red lights subjects received were experimentally controlled as described below.

b. Manipulation of evaluations received from others. Each subject was able to observe from the lights on his panel whether or not each other member agreed with his opinions, and also how the others were being evaluated for their opinions. These evaluations were controlled by the experimenter's assistant so that two subjects in each group received 80% green lights from each peer (Agreement condition), and the remaining two subjects received 30% green lights from each peer (Disagreement condition). Furthermore, each

subject saw on his own panel that every other member was receiving 50% green lights. The ordering of the green and red lights over trials and of the responding position of subjects in the Agreement and Disagreement conditions was systematically varied across groups.

3. *Dependent Variables*

The number of switch-throw agreements and disagreements a subject sent to each peer was recorded, and from these data the total number of agreements sent to the group was calculated for each block of five trials. The maximum number of agreements a subject could send to his three colleagues for a given block of five trials was 15. In addition, latencies were measured from the time the experimenter announced the number of the next item on the inventory to the time the subject gave his answer to that item.

At the conclusion of an experimental session the manipulations were disclosed, and the real purpose of the experiment was discussed.

C. RESULTS

1. *Experimental Analyses*

Prior exposure to the group was assumed to increase the positive value of the group's agreement and the negative value of the group's disagreement. Thus the main hypothesis was that subjects who had interacted with their peers will show more reciprocity during the social exchange of evaluations than subjects who had not interacted. This hypothesis was supported. High Exposure subjects agreed with the group more in the Agreement condition and agreed less in the Disagreement condition than Low Exposure subjects.³ A statistical interaction between exposure and agreement was obtained ($F = 4.11$, $df = 1/36$, $p < .05$). Furthermore, under High Exposure conditions the difference between means of the Agreement ($\bar{X} = 17.4$) and Disagreement ($\bar{X} = 13.4$) conditions was significant ($t = 2.11$, $df = 18$, $p < .05$). Under Low Exposure conditions there was actually a slight, though nonsig-

³ It should be noted that questions asked the subjects at the conclusion of the experiment revealed almost no suspicions of the source of the green and red lights. Further questioning revealed that subjects were sensitive to the evaluative information presented by way of the lights. Mean estimates of the percentage of green lights received were 73% in the Agreement condition and 31% in the Disagreement condition. In line with the fact that each subject was led to believe that his peers were receiving 50% green lights, subjects in the Agreement condition rated themselves as performing equal to or better than the group, and subjects in the Disagreement condition rated themselves as equal to or worse than the group ($\chi^2 = 21.4$, $df = 2$, $p < .001$).

nificant, tendency in the opposite direction (the means were 17.2 in the Agreement condition and 18.8 in the Disagreement condition).

The average length of time subjects spent deciding upon their test answers was examined as a function of the manipulations of prior exposure and amount of agreement from others. Two results are worth noting. First, subjects in the High Exposure condition had longer response latencies than those in the Low Exposure condition ($F = 9.58$, $df = 1/36$, $p < .01$). If latency indicates how hard the subject tried to win the group's approval, then this result provides further support for the conjecture that exposure increases the importance of the group's evaluations. Second, although in all conditions mean latencies decreased from the first to the second block of five trials ($F = 11.11$, $df = 1/36$, $p < .01$), this decrease was greater in the Agreement condition ($\bar{X} = 3.2$) than in the Disagreement condition ($\bar{X} = .4$, $F = 6.31$, $df = 1/36$, $p < .05$). This finding suggests that subjects continued to try harder when the group disagreed with them, and it coincides with a motivational interpretation of previous results showing that subjects who thought the group disagreed with them were actually making more acceptable comments during the group discussion than subjects who thought the group agreed with them (17). In addition to the difference between the Agreement and Disagreement conditions, already noted, there was some tendency for this difference to be greater in the High Exposure than the Low Exposure conditions. Although this interaction is not significant ($F = 2.04$, $df = 1/36$), the direction of results is consistent with the argument that subjects were more responsive to the evaluations of others in the High Exposure than the Low Exposure conditions.

2. Marlowe-Crowne Social Desirability Scale

The second hypothesis that high need-approval subjects would reciprocate more than low need-approval subjects was not supported. High and low need-approval individuals (as determined by a median split) did not differ in the number of agreements sent to others as a function of agreements received from others. Furthermore, the correlation between need-approval scores and number of agreements sent to others was insignificant in both the Agreement ($r = +.08$) and Disagreement ($r = +.06$) conditions. The influence of this individual difference variable on the latency measure also was examined. High need-approval subjects had longer response latencies in the Agreement condition ($\bar{X} = 21.5$) than the Disagreement condition ($\bar{X} = 18.6$); however, low need-approval subjects had longer response latencies in the Disagreement condition ($\bar{X} = 21.6$) than the Agreement condition ($\bar{X} = 19.4$). This interaction is statistically significant ($F = 7.00$, $df = 1/36$, $p < .05$).

D. DISCUSSION

The results support the assumption that exposure increased the importance of others' evaluations. High Exposure subjects not only reciprocated more in their opinion evaluations, but also spent more time deciding upon their opinions as compared to Low Exposure subjects. If the reward value of agreement and the punishment value of disagreement were greater in the High Exposure condition, then it seems plausible that subjects would work harder to express opinions acceptable to the group and, as predicted, that they would react more positively when others agreed with them and more negatively when others disagreed.

An alternative explanation of the social exchange findings involves the possibility that exposure, especially of a congenial sort, increases the *expectancy* that others will express approval. If High Exposure subjects expected more approval, then the agreement data could be interpreted as reactions to the confirmation and disconfirmation of expectancies (1, 4) and not to agreement and disagreement *per se*. Specifically, disagreement from others was a greater disconfirmation in the High Exposure conditions and produced a more hostile reaction to the group. This explanation is contradicted, however, by the fact that response latencies in the High Exposure conditions were significantly longer throughout the social exchange period. Why would subjects work harder for approval when they already expected it? The present reasoning suggests that the differences between the High and Low Exposure conditions were obtained not because subjects in the former condition *expected* more approval but because they *wanted* more approval.

The results obtained relating to the Marlowe-Crowne Social Desirability Scale were inconsistent with the assumption that this personality test measures solely individual differences in need for approval. If this assumption were correct, then one might expect high need-approval subjects to try harder (and, consequently, to show longer latencies) than the low need-approval subjects in the Disagreement condition, with less differences between these groups in the Agreement condition. However, the mean latency scores were in the opposite direction from this expectation.

The key to this problem may lie in the suggestion from numerous sources that approval-dependent people are characterized by a lack of self-esteem and by strong denying or repressing modes of ego defense (6, 10, 21, 22). Virginia Crandall (5) proposed that the approval-dependent person "does not seem to seek *positive* approval and recognition for behaviors more competent than the norm, but instead seems to *avoid disapproval* by molding his behavior to

the norm and acceding to the demands of others." These speculations portray an individual who might well try to maintain social approval once he had gained the acceptance of his peers, but who is also prone to defend himself against disapproval through various mechanisms. This line of reasoning is consistent with the present data. Thus, Low MCSD subjects were coping directly with the situation by attempting to give more acceptable answers when the group disagreed with them as compared to when the group agreed. On the other hand, High MCSD subjects seemed to adopt more ego defensive strategies. In the Agreement condition, in which success was guaranteed by virtue of the experimental manipulations of the evaluations, these subjects spent more time on their answers in an effort to maintain the praise of the group. In the Disagreement condition High MCSD subjects spent less time on their answers and probably denied the importance of the test as an excuse for their failure.

There remains the problem of why a relation between the MCSD scale and differential evaluations of others was obtained in previous studies (20, 24) but not in the present study. A possible explanation lies in an important procedural difference. In the present study the proportion of agreements a subject received from each of the three peers was the same. Consequently, the subject could not only respond differently in his evaluations of the group but also in his task behavior. For example, if the group were disagreeing, he could work harder on his test answers to improve his outcomes. However, in the two previous studies the experimental controls were such that each subject received a high proportion of agreement from one peer and a high proportion of disagreement from another peer. In this case, the subject could not react differentially in his task responses, since both the person ostensibly agreeing and the one disagreeing were evaluating the same response. Hence, the findings suggest that when subjects can handle the evaluations they receive from others by altering the behavior being evaluated, individual differences on the MCSD scale are less likely to affect evaluative reactions to others.

E. SUMMARY

Ten groups of four Ss each participated in a social exchange in which they indicated their agreements or disagreements with one another's opinions on a personality inventory. The number of agreements Ss received was experimentally controlled so that two members of each group received mostly agreements from the group, and two members received mostly disagreements. The amount of personal exposure to the group was also manipulated. The members of one-half the groups interacted prior to the social exchange, and the

members of one-half the groups did not interact. As predicted from the assumption that exposure increases the importance of the group's evaluations, Ss who had interacted agreed more with the group when the group agreed with them than when the group disagreed. This tendency was significantly reduced when Ss had not interacted. Individual differences in need for social approval affected subjects' response latencies in expressing their opinions but not their evaluations of other members' opinions.

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Department of Psychology
Cornell University
Ithaca, New York 14850

DEVELOPMENT AND VALIDATION OF THE LIFE STYLE QUESTIONNAIRE*

Human Engineering Laboratories, Aberdeen Research and Development Center

MICHAEL P. NICHOLS,¹ THOMAS P. GORDON,² AND
MURRAY D. LEVINE³

A. INTRODUCTION

This study was done as a part of a major research effort on the personality determinants of psychological stress in which it was hypothesized that when a man's life style is incongruent with the demands of a task he must perform he will experience stress. Testing this hypothesis required selection of two groups with contrasting life styles and subjecting both groups to two task situations. Each group of subjects should find one task congruent with their habitual behavioral repertoire and the other task incongruent.

The specific personality types selected were somewhat arbitrary. The only theoretical demands on selecting subjects were that there be two groups divided along some bipolar personality continuum. However, it was felt that choosing groups dichotomized along some single personality variable, such as aggression, would allow for too many uncontrolled sources of variance. It was decided, therefore, to select two relatively global, multivariable life styles. The A-type chosen was described as active, impulsive, assertive, aggressive, and present-oriented. The B-type was chosen as inactive, compulsive, deferent, cautious, and future-oriented.

The present study involves the development of an objective questionnaire with which to differentiate subjects with these two life styles. Items were selected on the basis of face validity, and chosen to cover a broad range of behaviors, a common procedure recommended in the American Psychological Association's Standards for Educational and Psychological Tests and Manuals (1).

Usual validation procedures consist of correlation with established inventories and factor analyses (2, 9). Some researchers have gone beyond this correlational approach to include self-ratings and peer ratings (8) and staff

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¹ Now at the University of Rochester.

² Now at Yerkes Primate Center.

³ Now at Spring Road Community Mental Health Center, Washington, D.C.

judgments of validity (3). In the present study, the correlational approach was used as a first step, followed by naturalistic observation over an extended period of time.

B. METHOD

1. *Subjects*

All participants were male members of the United States Army between the ages of 18 and 24. These men were screened on the basis of an Army intelligence test, and those with an intelligence quotient below 95 were excluded. A total of three groups were studied: first, 12 men participated in a pilot study; second, 93 were tested from which 14 were selected for interviews; and finally, 141 were tested from which 10 were selected for a two-week validation study.

2. *Procedure*

The Minnesota Multiphasic Personality Inventory (MMPI) and the Edwards Personal Preference Schedule (EPPS) were used to test the 12 subjects in the pilot study. Both of these instruments have scales that are relevant to the two life styles. However, it was found that both tests were susceptible to response biases (4) and were impractical to administer in one sitting. In order to resolve these problems, a new test, the Life Style Questionnaire (LSQ), was developed.⁴ The LSQ is a short (20 minutes) forced-choice questionnaire based on social learning principles (7). Previous research findings indicate that attitude measures are poor predictors of overt behavior (6). Therefore, instead of asking respondents to describe themselves in terms of interests, thoughts, and feelings, they were asked for a brief report of past behavior in selected areas. The items require examinees to indicate in which of two possible activities they have engaged most frequently. Each item has two types of alternatives, and an attempt has been made to match the alternatives for social desirability. Some of the A-type alternatives are as follows: acting, playing basketball, not using seatbelts, and dating early and frequently. Some of the B-type alternatives are long-distance running, collecting stamps or coins, repairing things, and work that requires painstaking attention to detail. In addition to balancing the 58 items for social desirability, seven additional items are included in a Lie scale. Some of the items on this scale are as follows: "I am always friendly and polite," "I never masturbate," and "I have never been angry with my parents."

⁴ Copies are available upon request.

A sample of 93 men were tested to obtain norms for the LSQ and to provide data for a factor analysis along with the MMPI and the EPPS. From this sample a group of 14 subjects were selected for follow-up interviews which were taped and rated by five independent raters.

A second group of 141 subjects was tested to check the reliability of the results from the first sample and to furnish the basis for a new sample for a follow-up study at our laboratory. Ten subjects were housed in our experimental barracks for two weeks, during which time they were interviewed, tested, and observed. The validation procedure consisted of (a) daily observations and ratings by observers who actually lived with the subjects and whose status as psychologists was unknown to the subjects, (b) various paper and pencil tests with scales of theoretical interest, (c) individual projective tests, and (d) clinical interviews.

C. RESULTS

The mean of the 58 item A-scale on the LSQ from the first sample of 93 subjects was 29.8 with a standard deviation of 7.4. The mean of the seven-item Lie scale was 1.4 with a standard deviation of 1.3. A Varimax procedure yielded the following two factors. Factor A consisted of the following: LSQ A-scale .77; EPPS Deference —.43, Order —.31, Dominance .56, Aggression .52; MMPI Mania .58. Factor B comprised the following: LSQ A-scale —.73; EPPS Succorance .45, Dominance —.56, Abasement .41; MMPI Depression .54, Psychasthenia .37, and Social Introversion .62.

A sample of 14 individuals with LSQ scores one standard deviation or more from the mean in either direction was interviewed and the tapes of the interviews rated. The five raters were unanimous in assigning 12 of these subjects to the same life style category as did the LSQ, and the majority were at variance with the LSQ in only one case.

The factor analysis of the second sample (141 subjects) produced two factors which were essentially the same as the two from the first sample, but accounted for less of the total variance.

Of the 10 individuals who participated in the two-week pilot study, only eight were one standard deviation or more from the mean of the LSQ. This was so because only a limited number of men in this group were available for temporary duty as subjects in the study. Three observers, to whom the LSQ scores were unknown, lived with the subjects and rated their life styles during social interactions and participation in various tasks. Raters were required to rate each subject on the component dimensions of the two life styles (defined above), and then to make one global rating on a seven-point scale ranging

from "very much an A-type" to "very much a B-type." Only the global ratings were analyzed and they were treated as either/or judgments. To do otherwise would have been to attribute finer ability to differentiate than was warranted. Although most of the ratings were at one of the two endmost points at either extreme, all ratings of very much, moderately, or somewhat A-type or B-type were translated as simple A-type or B-type, and the center-point which represented an inability to decide was left as is. The three raters were unanimous in assigning six of the subjects to the same life style as did the LSQ and two of the three raters concurred with the LSQ on the remaining two subjects.

A total of seven group and individual tests were administered and analyzed to produce personality descriptions of the subjects. These personality descriptions corresponded to the life styles as predicted by the LSQ. However, the personality descriptions were written by the senior author who was biased by knowledge of the LSQ scores and therefore cannot be considered as an independent source of validation.

Each subject was interviewed by one psychiatrist and by two psychologists. These interviewers used the same rating forms as did the observers, and the data were likewise translated into global ratings. The three interviewers concurred without exception in assigning the eight subjects to the same life styles as did the LSQ.

D. DISCUSSION

The LSQ was designed to elicit a self-report of actual behavior. This study demonstrates that a brief report of past behavior can accurately predict personality types as they are revealed in global personality inventories, clinical interviews, and daily observations. Thus, though the LSQ does not directly yield a behavior sample, and as Meehl (5) points out, it is a mistake to assume that responses on a test are surrogates for behavior, the LSQ does relate to ratings of actual behavior.

E. SUMMARY

A new test, the Life Style Questionnaire, is described and validation procedures are discussed. Subjects were asked for a brief report of their past behavior on a forced-choice questionnaire. The results were then factor analyzed along with scores on the MMPI and the EPPS to obtain concurrent validation. Finally, the results were validated with interviews, further testing, and observations during a two-week study.

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Department of Psychology
University of Rochester
Rochester, New York 14627



CONSISTENCY AMONG ATTITUDES, BELIEFS, AND BEHAVIOR¹

University of California, Berkeley

WILLIAM H. BRUVOLD

A. INTRODUCTION

The relationships among attitudes, beliefs, and behavior are central issues in contemporary social psychology. To date, two main theoretical ventures, consistency and behavioral, have appeared which deal with these three factors. The consistency approach, which has historical roots in the Gestalt School, emphasizes congruence or balance between affective, cognitive, and conative aspects of the personality. The main contribution to triadic consistency theory appears to be the statement of Insko and Schopler (5). The second approach, which has historical roots in behaviorism, emphasizes stimulus variables, reinforcement experience, and internal states which together govern overt responses. The main behavioral theory contribution dealing with the relation among beliefs, attitudes, and behavior appears to be a series of articles by Fishbein (4).

The present consistency hypothesis provides for the assessment of simple attitude-behavior and attitude-belief consistency. Definitions of attitude and behavior are very similar to those proposed by Insko and Schopler (5) and by Fishbein (4) in that attitude is seen to be the unidimensional affective reaction toward a denotable object or proposition, and behavior observable motor activity of the individual that can be objectively described. The major differences between the present study and the other two approaches involve definitions of belief, attitude-belief consistency, and attitude-behavior consistency. Belief is here defined as an assertion regarding the natural universe accepted as true by the individual rather than as a perceived relation between attitudinal objects. This approach allows both behavior and beliefs to be treated in analysis as separate entities rather than dependent elements in a larger

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structure. Consistency is then defined in terms of diadic congruence of attitude with belief or behavior as outlined below.

Assessment of attitude-belief consistency initially requires the determination if a belief is positive or negative toward an attitude object. Beliefs that assert or imply that the attitude object possesses desirable attributes or causes desirable consequences would be classified as positive, and those asserting or implying undesirable attributes or consequences would be classified as negative. Consistency would be obtained when positive beliefs are associated with favorable attitudes and negative beliefs with unfavorable attitudes.

Assessment of attitude-behavior consistency initially requires determining whether a behavior is positive or negative toward an attitude object. Behavior that involves approach, contact, or acceptance would be classified as positive, and that which involves avoidance, noncontact, or rejection would be classified as negative. Consistency would be obtained when positive behaviors are associated with favorable attitudes and negative behaviors with unfavorable attitudes.

These definitions make possible a statement of a general hypothesis: *The relationship between attitudes toward a specific object and beliefs and behavior regarding that object will show significant trends toward consistency in a population of individuals for whom the attitude object is salient.*

The research data reported by this paper involve water resources issues in California. Semiarid, heavily populated areas of the state face imminent and severe water shortages which have initiated unprecedented water treatment operations that reclaim water from domestic sewage for recycling and reuse. A small number of these reclamation plants have been operating for the last few years in water scarce areas of California, providing the opportunity to assess behavior regarding the community facilities supplied with reclaimed water, as well as attitudes and beliefs regarding reclaimed water in localities where these matters are decidedly salient.

Specifically, this report deals with attitudes toward the use of reclaimed water for swimming, behavior involving community recreational areas supplied with reclaimed water, and beliefs regarding California's need for new water resources and the relative merits of scientific *versus* natural methods of water purification. The latter two topics were selected *a priori* as central to attitudes regarding reclaimed waste water.

The hypothesis involving attitudes and behavior is that (a) users of the community pool supplied with reclaimed water should have more positive attitudes toward reclaimed water for swimming than nonusers. The hypotheses for attitudes and beliefs are that (b) individuals who believe that California faces an imminent water shortage should have more positive attitudes toward

reclaimed water for swimming than individuals who do not hold this belief, and (c) individuals who believe that scientific methods of water purification are superior to natural methods should have more positive attitudes toward reclaimed water for swimming than individuals who believe the natural methods to be superior. While hypothesis (a) follows directly from the material presented above, deduction of hypotheses (b) and (c) involves an intermediate step. The belief that scientific methods of water purification are better than natural methods asserts that the attitude object (reclaimed water) possesses a desirable characteristic. The opposite is true if natural methods are believed superior. The belief that California faces an imminent water shortage implies that the attitude object can create the desirable consequences of helping to alleviate the coming shortage. Reclaimed water cannot play this important role if no shortage develops.

B. METHOD

1. Study I

a. Respondents. Twenty-five respondents were selected by a method of quota sampling from a San Diego suburb that had used, with much local, regional, and even national publicity, reclaimed water for swimming, recreational lakes, and golf course irrigation for the past several years. Five "square" blocks were selected in order to be geographically representative of the entire area. Five respondents were selected from each block by door-to-door contact under the restrictions that each read English and be 21 years of age or older. No more than three female respondents could be chosen from any one "square" block.

b. Attitude Assessment. The major attitude measure employed was a Thurstone-type attitude scale dealing with the use of reclaimed water for swimming. The performance characteristics and items of this scale have been recorded elsewhere (2). It should be strongly emphasized that the Thurstone scale contained items dealing only with affect toward the use of reclaimed water for swimming. Statements involving belief components were deliberately excluded from the scale.

c. Behavior and Beliefs. Behavior was assessed by structured interview questions administered to each respondent regarding his and his family's use of each of the three community recreation facilities supplied with reclaimed water. This assessment of behavior was deemed accurate because there appeared to be no reason to falsify responses regarding use of recreational facilities, and because respondents should be able to recall the general pattern of usage given each facility during the year preceding the interview. Beliefs

were assessed by semistructured questions followed by contingent questions and probes as appropriate. These questions covered the possible need for new water resources in California and the relative merits of scientific *versus* natural methods of water purification.

d. Interview Procedures. Attitude, behavior, and belief assessment were obtained in the broader framework of a survey regarding California's water resources. Many of the interview questions dealt with general water resources matters so that the issue of reclaimed water was but one of several dealt with. Results of the general survey are presented elsewhere (3).

Two interview sessions were held with each respondent in his home and each was conducted by an experienced interviewer identified as an employee of the State of California. The objective of the interview was stated to be tabulation of citizens' opinions about California's water resources. The first two sections of the initial interview, during which the topic of reclaimed water was not mentioned, covered use of community facilities supplied with reclaimed water and general water resources matters including California's need for water. The attitude scale described above was administered during section three of the interview schedule. Questions on water purification constituted the first section of the second interview schedule which was administered approximately two months after the first was given. Study I was conducted during the summer of 1969.

2. Study II

a. Respondents. Selection of respondents for Study II involved a three stage cluster sampling procedure using the same San Diego suburb as Study I. First, a grid of 1000 foot squares was laid over a detailed map of the area, all grid squares containing residential dwelling units were listed, and 30 such grid squares were selected by random-start systematic sampling. Second, all dwelling units in the centermost "square" block in each selected grid were listed, and approximately 100 were selected by random-start systematic sampling. Third, one English-reading individual, 21 years of age or older, was randomly selected from all those residing at the selected dwelling unit to serve as respondent for the study. Ninety-seven of 103 selected respondents participated in the research, and none had served in Study I.

b. Attitude, Behavior, and Belief Assessment. Attitudes toward the use of reclaimed water for swimming were measured with the use of the same Thurstone-type scale employed in Study I. Behavior assessment was accomplished by a series of structured questions regarding use of community facilities supplied with reclaimed water. Study II behavior questions were more detailed

and exhaustive than those employed in Study I. Belief assessment in Study II was accomplished by semistructured questions nearly identical to those used in Study I.

c. *Interview Procedures.* As in Study I, the assessment of behavior, beliefs, and attitudes was imbedded in a larger interview dealing with water resources matters in California. All information was obtained in a single interview session conducted in the respondent's home at his convenience by a highly experienced interviewer identified as an employee of the State of California, who described the objective of the survey as in Study I. Behavior assessment questions were imbedded in section one of the interview which dealt with the use of local recreational facilities. Belief questions regarding the need for new water resources were imbedded in the second section of the interview which dealt generally with water resources in California. The issue of water reclamation was not raised during the first two parts of the interview procedure. The attitude scale was administered during the third phase of the interview, and beliefs about water purification methods were assessed during the fourth section of the interview that dealt with ecological management, recycling of water, and the relative value of science *versus* nature in achieving sound environmental practices. Study II was conducted during the winter of 1970.

C. ANALYSIS AND RESULTS

Means of individual attitude scale scores appear in Table 1. Behavior data were indexed in the same fashion for both studies for purposes of this report. Usage means that either the respondent, his spouse, or his children used the facility one or more times during the year preceding the interview. Belief data were also coded identically for purposes of this report. As shown in Table 1, responses to the need questions were coded as belief that California does, or does not, face an imminent water shortage, and response to the purification question as belief that either natural or scientific procedures represent the superior method of water treatment. All coding was done independently by two experienced coders not involved in the field interviewing. Coding disagreements, which were less than 10 percent for any one question, were resolved in a consensus session.

One-way analysis of variance (6) was computed for each of the Study I comparisons shown with a linear trend analysis included for the two analyses involving three factors. None of the seven main effect or the two linear trend mean squares was statistically significant. It should be noted, however, that all effects, if it is assumed that number of uses or "positive"

TABLE 1
ATTITUDE SCALE MEANS

Response category	Study I		Study II	
	N	M	N	M
Use of golf course				
No	22	7.25	79	6.86
Yes	3	7.80	18	7.73
Use of recreation area				
No	7	6.77	36	6.63
Yes	18	7.52	61	7.25
Use of pool				
No	16	6.95	71	6.72
Yes	9	7.95	26	7.46
Number of uses				
0	5	6.20	26	6.41
1	11	7.29	42	6.99
2	9	7.95	29	7.61
Water purification ^a				
Nature	10	6.84	35	6.12
Science	15	7.62	52	7.58
Need for water				
No	17	7.17	62	7.00
Yes	8	7.62	35	7.05
Number of "positive" beliefs				
0	8	6.66	20	5.82
1	11	7.61	51	7.28
2	6	7.63	16	7.56

^a The 10 respondents in Study II who did not answer the purification question were not included in the combined belief analysis.

beliefs should correlate with attitude scale scores, were in the predicted order for Study I.

The same analyses were performed for Study II data with statistically significant results obtained in five cases. In the analysis of attitude scale scores associated with zero, one, or two uses, the main effect yielded an F -ratio of 2.66 ($df = 2/94$, $p < .10$), and the linear trend an F -ratio of 5.32 ($df = 1/95$, $p < .05$). In the analysis of attitudes, and beliefs about purification methods the F -ratio was 12.89 ($df = 1/85$, $p < .001$). For the association of "positive" beliefs with attitudes the F -ratio for the main effect was 5.09 ($df = 2/84$, $p < .01$), and that for the linear trend 8.10 ($df = 1/85$, $p < .01$). It should also be noted that for all analyses performed on Study II data the means were in the exact order predicted by the present consistency approach.

D. DISCUSSION

The results of this study, with one exception, give uniformly equivocal support to the three specific hypotheses outlined above. In Studies I and II

there was an insignificant tendency for respondents classified as swimming pool users to have more positive attitudes than those not using the pool. The same sort of result was obtained for the relation between beliefs about California's possible water shortage and attitude scale scores. The only specific hypothesis unequivocally supported involved Study II data on the relation between attitude toward reclaimed water and beliefs about scientific *versus* natural purification methods. In Study I the predicted difference was not statistically significant. Thus, when viewed separately, the specific predictions of the consistency approach proposed by this paper receive a modicum of, but not resounding, support from the present data. Such results themselves are not dissonant with earlier research involving consistency between attitudes, beliefs, and behavior (4, 5).

A very interesting result, however, is obtained when both beliefs and the several behaviors are related to attitudes. Anderson and Fishbein (1) found that affective response toward an attitude object was a function of the many beliefs held regarding that object. The present data offer support to this view in that the correlation between the number of "positive" beliefs and attitude toward the use of reclaimed water for swimming found in both studies was significant in Study II. Also interesting is the correlation between number of uses of reclaimed water and attitude toward its use for swimming found in both studies and shown to be significant in Study II. Such results strongly suggest that consistency of attitudes with beliefs and behavior will more likely occur when several beliefs or several behaviors are assessed and found to be consistent with the attitude under study.

E. SUMMARY

An hypothesis of attitude-belief and attitude-behavior consistency was stated and tested by two survey research studies undertaken on wastewater reclamation in an area where water resources matters were salient. Results showed that while specific attitude-belief and attitude-behavior consistencies were not always statistically significant, there was evidence for such consistency when more than one belief, or more than one type of behavior, were considered combinatorially.

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Earl Warren Hall School of Public Health
University of California
Berkeley, California 94720

HELP-SEEKING BEHAVIOR IN A TASK-ORIENTED DYADIC INTERACTION*

Wayne State University and Indiana University

SHELDON COTLER AND ROBERT F. QUILTY

A. INTRODUCTION

At a theoretical level the concept of dependency has been used either to describe person-oriented behavior like proximity, attention, and approval seeking, or it has been used to characterize goal-oriented and help-seeking behavior (3, 5, 11, 19, 20). At the behavioral level, Heathers' "walk the plank" task (15) with young children, Hartup's behavior checklist (14) which uses experimenter and teacher ratings, and Diener's tallies of requests for help in dependency "eliciting" and "inhibiting" situations (9) serve as representative examples. In addition, several paper and pencil tests have been used to identify the dependent personality (6, 12, 17, 18).

A number of studies have dealt with interpersonal behavior, conceptually similar to dependency, which has been characterized as conformity, yielding, independence, ascendancy, and dominance. Fitzhugh (10) found sex and group differences between delinquent and nondelinquent boys and girls on yielding and conformity behavior. In Asch's (2) group conformity study, individuals in the minority adopted consistent patterns of either independence or yielding or intermediate coping behaviors in response to the majority opinion. Ascendancy behavior in a dyad, defined by latency of a first statement, amount of participation, and resistance to change in opinions, was positively related to measures of emotionality (7). Dominant behavior has been positively related to male ascendancy and leadership (21) and has been modified by differentially reinforcing children's choices in dyadic decision-making situations (4, 13).

The subjectivity and inconsistency of the literature related to dependency led Cotler, Quilty, and Palmer (8) to develop a methodology which objectively quantified and classified help-seeking dependent behavior. The methodology consisted of presenting female subjects with a series of 40 factual questions with an option to ask a confederate for help after the subjects recorded a written answer. Under this scheme, there were four possible types of re-

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sponses: independent correct or incorrect responses and correct or incorrect responses followed by requests for help; the last two categories were classified as help-seeking behavior.

The purpose of the present study was to predict the help-seeking and helping behavior of two female subjects in a task-oriented dyadic interaction. The previously mentioned methodology, which yields measures of help-seeking behavior, provided the independent variables for the experiment.

B. METHOD

1. *Subjects*

Thirty pairs of unmatched and unacquainted female subjects drawn from introductory psychology classes were used in the study. It was decided to defer temporarily the investigation of potential sex differences, since females were used in an earlier study (8).

2. *Procedure*

Two female *Ss* were led into a room and seated at desks facing away from each other. For Part I of the experiment they were told to provide written answers to each of 40 factual questions. In addition, the *Ss* were asked to circle the number next to each item on which they wanted to ask the other subject for assistance. The *Ss* knew that they could consult with each other at the end of the experiment about each of the circled items, with the option of accepting their partner's answer or their own. The *Ss* received 4¢ for each correct answer and 2¢ for a correct answer in which help was requested. They lost 4¢ for an incorrect answer and 2¢ for an incorrect answer in which help was requested.

The financial reward served to discourage continual help-seeking as a maximum strategy and was designed to utilize popular American conceptions about help-seeking dependency; i.e., individual endeavors are more highly rewarded than collective efforts, but with a concomitant risk of greater losses.

Before comparing their answers on Part I, the *Ss* were asked to complete Part II of the experiment. They were asked to examine Holtzman inkblot designs (16) and identify the major or primary figure or object for each card. They were told that they could use the entire blot or just parts of it, and their responses could include people, or animals, or parts of people or animals, and all kinds of inanimate objects.

A legitimate coin flip, called by one of the *Ss*, was used to designate one *S* as the "leader" and the other as the "helper." The leader was told she could consult with the helper, but not engage in lengthy discussions. It was em-

phasized that the leader had to make the final decision about each of the inkblots. Ten of the more ambiguous Holtzman Inkblots (16) were used for the task. This proved to be an interesting task and promoted a good deal of verbal interaction.

3. *Independent Variables*

Part I of the experiment provided four classes of responses: independent correct (C) and independent incorrect (X) responses, and correct responses for which help was requested (IH) and incorrect responses for which help was requested (AH). Two ratios were calculated for each S and these served as the independent variables. An independent correct ratio (IC) was calculated by dividing the total number of items answered correctly and independently by the total number of correctly answered items with and without requests for help ($IC = C \div C + IH$). Low independent correct Ss (LIC), based on a median split of each group, were considered to be high help-seeking or dependent Ss and Ss with a high-independent correct ratio (HIC) were considered to be low help-seeking Ss on this measure. An independent incorrect ratio (II) was calculated by dividing the number of items answered incorrectly and independently by the total number of items answered incorrectly, whether or not help was requested ($II = X \div X + AH$). The Ss with low II ratios (LII) were viewed as high help-seeking Ss, and high independent incorrect Ss (HII) were considered as low help-seeking Ss on this measure.

4. *Dependent Variables*

The dependent variables consisted of the Ss' performances on Part II of the experiment. The data were obtained by having two people independently evaluate the tape recordings of the 30 dyadic interactions between female Ss. The data were scored in terms of response units and the raters had no knowledge of the subjects' performances on Part I. Over 95% of the response units proved to be task-oriented and related to the instructions regarding the Holtzman Inkblot card. A response unit consisted of any complete statement made by one of the Ss which was preceded by and followed by either a response from the other S or by a 10-second period of silence. The two raters practiced scoring the tapes from pilot Ss and subsequently compared and discussed the reasons for their ratings. The interrater reliabilities for the total number of responses in each of the below-mentioned categories were between .80 and .90.

The response units were designated in terms of the following descriptive

categories: (a) Acquiescent responses by the leader in which the leader explicitly accepted the help of the helper. (b) Direct requests for help by the leader in which the leader made explicit requests for help or directed questions to the helper. (c) Indirect requests for help by the leader involved verbal responses by the leader which were not direct requests for help but which were followed by responses from the helper that consisted of input directed toward completing the task: i.e., leading responses, such as, "I wonder if that could be a dog?" (d) Rejections of offered help in which the leader explicitly rejected help or when help was not incorporated into the leader's own response. (e) Unsolicited help by the helper consisted of help provided by the helper which was not cued by responses from the leader.

In order to standardize and control for different amounts of responsivity across pairs of Ss, the dependent variables for the leader were calculated as ratios between the total task-relevant response units of the leader and the individual response categories. The responses classified as unsolicited help-giving by the helper were standardized by calculating the ratio between the total task-relevant response units of the helper and the number of unsolicited responses. These ratios were then multiplied by 100 to give the standardized number of responses in each category.

5. Hypotheses

It was predicted that low independent correct (LIC) leaders—i.e., those Ss who had a greater propensity to ask for help when assistance was not objectively necessary to fulfill task requirements—would make more direct requests for help, more indirect requests for help, engage in more acquiescent responses, and reject less offered help than high independent correct (HIC) leaders. The same predictions were made for low independent incorrect (LII) leaders, in relation to high independent incorrect (HII) leaders. The independent correct and the independent incorrect ratios were viewed as complementary, but not necessarily identical or independent in their predictive power.

Differential interactions were predicted between leader and helper behavior. High independent incorrect and correct helpers were expected to be asked less direct and indirect help, since they were also expected to be more assertive and volunteer more unsolicited help than the low independent correct and incorrect helpers. In addition, high independent incorrect and correct helpers were expected to elicit more acquiescent responses and fewer rejections of their offered help from the leaders than low independent correct and incorrect helpers respectively.

TABLE 1
MEANS AND STANDARD DEVIATIONS OF STANDARDIZED NUMBER OF
RESPONSES FOR SUBJECTS RATED ON THE II AND IC RATIOS

Subjects		Leader categories					Helper's category
II	IC	Measure	Direct request	Indirect request	Acquiescences	Rejection of help	Unsolicited help-giving
high	high	mean	22.7	20.0	19.3	8.4	30.3
		SD	13.6	19.5	7.5	6.8	16.5
high	low	mean	24.8	27.6	24.8	11.6	15.2
		SD	13.2	19.4	8.4	6.8	10.5
low	high	mean	28.5	44.3	20.7	6.3	12.8
		SD	11.1	10.5	7.7	6.6	16.3
low	low	mean	36.0	23.5	27.7	5.3	19.3
		SD	10.1	16.8	10.4	4.6	15.8

C. RESULTS

Table 1 illustrates the mean performances of high and low independent groups of Ss for each of the response categories.

With regard to the specific hypotheses, low independent correct (LIC) leaders sought more direct help than high independent correct (HIC) leaders ($F = 5.17$, $df = 1/22$, $p < .05$). In addition there was a significant two-way interaction between all leaders' direct requests for help and the type of helper from whom the help was sought ($F = 4.37$, $df = 1/15$, $p < .05$). Essentially, leaders requested significantly less direct help from helpers who were high or low on both ratios—i.e., helpers who were both HIC and HII or LIC and LII—than from helpers who were high on one ratio and low on the other (LII and HIC helpers or HII and LIC helpers).

The data for indirect requests for help do not yield the significant main effects evident in the direct request data. As a group, leaders, as predicted, did request more indirect help from LIC than HIC helpers ($F = 5.01$, $df = 1/22$, $p < .05$) and from LII helpers than from HII helpers ($F = 11.97$, $df = 1/22$, $p < .01$). In addition, there was a significant two-way interaction that was consistent with the interaction for the direct request data. HIC leaders who were also LII requested more indirect help than HIC leaders who were also HII ($F = 6.58$, $df = 1/22$, $p < .025$).

As predicted, LIC leaders had more acquiescent responses than HIC leaders ($F = 5.01$, $df = 1/22$, $p < .05$). The data for rejections are less clear-cut, but nevertheless consistent with our hypotheses. For rejections, we did not obtain a significant difference between HIC and LIC leaders, but by eliminat-

ing the middle one-third range of scores, HII leaders rejected more offered help than LII leaders ($t = 2.36$, $df = 18$, $p < .05$).

The final category to be considered is unsolicited help-giving by the helper. Significant main effect data to support our hypotheses were not obtained. There was a significant two-way interaction for unsolicited help-giving that is somewhat difficult to account for. HII leaders received more unsolicited help from HIC helpers than from LIC helpers as expected, but LII leaders got more unsolicited help from LIC helpers than HIC helpers ($F = 4.59$, $df = 1/22$, $p < .05$).

D. DISCUSSION

The female Ss' performances on a simple, factual questionnaire, which served as an unambiguous and easily quantifiable measure of help-seeking behavior, provided sufficient variability to account significantly for the Ss' performances in a task-oriented dyadic interaction. As suggested in Table 1, the leaders' direct and indirect requests for help and their tendencies to acquiesce and reject offered help were generally consistent with the hypotheses. The prediction about unsolicited help-giving was unsupported.

The significant interactions between leaders and helpers for both direct and indirect requests illustrate the necessity for assessing help-seeking behavior in terms of both the person seeking help and the person from whom help is being sought. The interactions may be interpreted by suggesting that helpers high in both measures would tend to function more independently and assertively and assume a more commanding role in the interaction and, therefore, provide less opportunity for the leaders to engage in direct help-seeking behavior. Helpers who are low in both measures may be seen as relatively dependent, insecure, and unassertive, therefore making them less attractive as resources for direct assistance, but increasing the probabilities of some indirect probings for help.

The ratios designated as independent correct and independent incorrect were significantly correlated ($r = .387$, $df = 58$, $p < .01$), but the magnitude of the correlation suggests that the ratios may be partially reflecting different behavioral processes and strategies. This study indicates that the two ratios are complementary and account for girls' behaviors in a dyad, both when they are used separately and in combination. The independent correct ratios would seemingly be associated with the female Ss' general orientations toward assuring success, while the independent incorrect ratios may reflect the Ss' interests in avoiding failure.

The intent of this study was to focus on the parameters of help-seeking

behavior in a dyad, placing it in the general context of studies on dependency, yielding, submission, conformity, and ascendancy. However, caution must be exercised in generalizing findings from a contrived laboratory situation with college students of only one sex to real-life social interactions. The authors share Adelson's concerns (1) about the artificiality of much personality research, but the approach encompassed in this study appears justified given the ambiguities and contradictions inherent in the research on dependency and conceptually similar interpersonal behavior.

E. SUMMARY

Thirty pairs of female Ss were administered a questionnaire consisting of 40 factual items. Each S had the option of either answering each question independently or seeking help from her partner. The Ss' performances on the questionnaire yielded two independent variables which were used to predict and account for help-seeking and help-giving behavior in a task-oriented dyadic interaction involving identification of objects on Holtzman inkblots. The dependent variables consisted of explicit or direct requests for help, indirect requests for help, acquiescent responses, rejections of offered help, and unsolicited help-giving. The results indicated that significant portions of the dyadic interactions on the Holtzman task were predictable from the nature of the Ss' help-seeking behavior on the questionnaire.

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Department of Psychology
Wayne State University
Detroit, Michigan 48202

CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 86, 143-145.

THE EFFECT OF RACE AND SIMILAR ATTITUDES ON INTERPERSONAL ATTRACTION AMONG WHITE RHODESIANS*

University of Cape Town, South Africa

CHRISTOPHER ORPEN

The theory of social comparison processes¹ suggests that persons are attracted to each other on the basis of similarity in opinions, attitudes, and emotional states. Reinforcement theory has also been employed to account for the consistent finding that attraction is related to the number of expressed attitudes and opinions of others that are similar to the S.² It is argued that confirmation of a belief, support of one's actions, etc. are rewarding events, since they provide information as to how effectively one is interpreting and coping with reality. The present study tests the relationship between attitude similarity and attraction in the white minority group now in effective control of Rhodesia, when the stranger is a member of the nonwhite (African) group. Since the Ss have been reared within a relatively authoritarian climate in which prejudice is the approved norm,³ it seems likely that they will react to Africans

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¹ Festinger, L. A theory of social comparison processes. *Hum. Relat.*, 1954, 7, 117-140.

² Byrne, D. Attitudes and attraction. In Berkowitz, L. (Ed.), *Advances in Experimental Social Psychology* (Vol. 4). New York: Academic Press, 1969. Pp. 38-89.

³ Rogers, C. A., & Frantz, C. Racial Themes in Southern Rhodesia. New Haven: Yale Univ. Press, 1962.

largely on the basis of race, their heightened sensitivity to race obscuring any tendency to be attracted on the basis of attitude similarity.

Forty white girls and 43 white boys in their final year of school (average age 17) were given an eight-item opinion scale in which they stated their feelings about such teenage issues as smoking, obedience to parental rules, liking for comics, and homework. A few days later each received a booklet containing the same scale, with responses that agreed with the Ss on none, half, or all of the eight items, and purportedly filled in by an African or white stranger of the same age, sex, and education. The Ss were randomly assigned to each of the six conditions and were required to examine the booklet in an effort to find out as much as they could about the stranger from his responses to the opinion scale. They were then given a shortened form of the Interpersonal Judgment Scale of Byrne and Nelson⁴ containing two eight-point items dealing with the stranger's likeability and desirability as a work partner.

A 2×3 analysis of variance was completed, with attitude similarity (complete-half-none) and race (white-African) as independent variables. The results generally supported the prediction that persons are attracted to others largely on the basis of attitude similarity even when the other is of a different race. The effect of attitude similarity on attraction was highly significant ($F = 18.54, p < .01$). Similarly, the effect of attitude similarity on liking was significant ($F = 20.64, p < .01$), as it was on desirability as a work partner ($F = 9.14, p < .05$). The effect of race on attraction ($F = 6.77, p < .05$) and on desirability as a work partner ($F = 5.29, p < .05$) were smaller, with neither reaching the .01 level; while that of race on desirability was not significant at the .05 level ($F = 3.72$). The Ss preferred the African strangers with like opinions ($\bar{X} = 9.64$) to the Africans with half-like opinions ($\bar{X} = 8.71$), who in turn were preferred to those with unlike opinions ($\bar{X} = 6.51$). The same trend was observed for the whites—mean attraction scores of 11.38 (like), 10.50 (half-like), and 7.07 (unlike). The differences between the level of attraction toward the like and unlike Africans and toward the like and unlike whites were both significant at the .01 level. Despite being reared in a segregated society with "prejudiced" norms, the Ss were significantly ($p < .01$) more attracted to the Africans with like attitudes ($\bar{X} = 9.64$) than to the whites with unlike attitudes ($\bar{X} = 7.07$). These

⁴ Byrne, D., & Nelson, D. Attraction as a linear function of proportion of positive reinforcements. *J. Personal. & Soc. Psychol.*, 1965, 1, 659-663.

findings can perhaps serve as further evidence of the generality of the "law of attraction" and suggest that Rokeach's⁵ contention that prejudice is largely a function of perceived dissimilarity of beliefs may have wider applicability than has sometimes been thought.

Department of Psychology
University of Cape Town
Rondebosch, South Africa

⁵ Rokeach, M. *The Open and Closed Mind*. New York: Basic Books, 1960.



A COMPARISON BETWEEN THE MORAL CODES OF AMERICAN, KOREAN, AND A GROUP OF AFRIKAANS-SPEAKING SOUTH AFRICAN STUDENTS*

*Department of Psychology, Rand Afrikaans University; Department of Psychology,
University of Pretoria; South Africa*

HENNING G. VILJOEN AND ELISE GROBLER

The present study compares the moral codes of a group of Afrikaans-speaking South African students (usually considered very conservative in their moral judgement) with those of a group of American students (representative of the Western culture) and a Korean student group (representative of a Far-Eastern culture). The expectation was that there would be greater resemblance between the moral codes of the Afrikaans and American groups—because both are part of the Western Christian value system—than between the Afrikaans and Korean groups.

Data for the 513 Korean freshmen (261 male, 252 female) from Seoul University and the 489 American freshmen (204 male, 285 female) from Ohio State University were obtained from the study by Rettig and Pasamanick¹ prior to 1959. Data for the 275 Afrikaans-speaking freshmen (75 male, 200 female) were gathered at the University of Pretoria in 1969. Crissman's moral judgement questionnaire,² which was used by Rettig and Pasamanick, was translated into Afrikaans and used for the Afrikaans-speaking Ss. The questionnaire contained 50 morally prohibited activities (e.g., "Having sex relations while unmarried"; "Forging a check"; "Disbelieving in God"), to which the Ss responded in terms of "rightness" or "wrongness," on a 10-point rating scale (a score of 1 indicating "rightness" and 10 "wrongness").

From a comparison between the overall means in the severity of moral judgement, the Afrikaans-speaking female Ss ($\bar{X} = 8.62$) seem to judge more severely, followed by the Korean females ($\bar{X} = 8.53$), the Afrikaans-

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¹ Rettig, S., & Pasamanick, B. Moral codes of American and Korean college students, *J. Soc. Psychol.*, 1959, 50, 65-79.

² Crissman, P. Temporal change and sexual differences in moral judgements. *J. Soc. Psychol.*, 1942, 16, 29-38.

speaking males ($\bar{X} = 8.28$), and the Korean males ($\bar{X} = 7.67$). The American females ($\bar{X} = 7.07$) and males ($\bar{X} = 6.59$) seem to be less severe in their judgement. Differences between the American and Afrikaans-speaking Ss, and the American and Korean Ss were found significant at the .001 level by t test. No significant differences were found between the Korean and the Afrikaans-speaking groups.

Because of the significant differences between the Afrikaans-speaking and American groups, the results are contrary to the expectation. Rettig and Passamanick maintained that the difference between the Korean and American groups should be viewed against the background of "the high rate of industrialization, intense capitalistic endeavor, heightened military economy, and increased urbanization of American society" (p. 72) in contrast to Korean society. This argument could also explain the difference between the Afrikaans-speaking and American groups: according to statistics 70% of the Afrikaans-speaking students at the University of Pretoria come from a rural background; thus the social structure of the Afrikaans-speaking group shows a greater similarity to the Korean than to the American group, which could in part account for the similarity in moral judgement. It might be argued that the lapse of more than a decade between the testing sessions of Rettig and Passamanick and the present survey could account for some of the differences or similarities found in the groups; but it can be duly accepted that no great change has taken place in the moral codes and social structure of the rural Afrikaners from 1959 to 1969, as may not be the case with the Americans and the Koreans. Although no empirical study supports the notion in regard to the Afrikaners, several academicians have in recent local publications stressed the fact that the great majority even of the urbanized Afrikaners still resist change and reveal a "rural mentality" or strong rural orientation. It is only since the political flux that preceded the 1970 elections that a slight indication of change in the outlook of the urbanized Afrikaners can be traced. For comparison, one could accept that the different times at which the data were gathered had no significant effect on the results for the Afrikaans-speaking Ss. In addition to the similarity in an urbanized social structure of the Koreans and the Afrikaners (at the time of testing), both were small groups exposed to external threats (the Koreans had just experienced the Korean war and the Afrikaners are trying to justify their "apartheid" policy against world opinion); it is therefore probable that both groups were relatively conservative in their judgements, as a residue of a strong love for tradition and resistance to change which is caused through fear of the loss of own identity.

presence of the external threat. It seems reasonable to conclude that the moral structure and situational factors (e.g., external threat) would have a greater influence on the moral codes of a people than would merely a common value system.

*Department of Psychology
Ronde Afrikaans University
Johannesburg, South Africa*



REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 86, 151-153.

DOGMATISM AND PREJUDICE IN WHITE SOUTH AFRICA*

University of Cape Town, South Africa

CHRISTOPHER ORPEN AND QUENTIN ROOKLEDGE

It has been argued¹ that the relationship between prejudice and personality is largely a function of whether the prevailing cultural norms explicitly sanction prejudiced ideas. In cultural settings where prejudiced norms prevail individuals will be encouraged to hold attitudes of intolerance largely irrespective of their basic personality structure. This argument was supported in a previous study² with persons reared in the relatively prejudiced climate of White South Africa, since insignificant correlations were found between the F-scale measure of personality and two measures of prejudice.

The present study tested whether this lack of relationship between prejudice and personality would also obtain when "personality" did not refer to authoritarianism, as measured by the F-scale, but rather to a different dimension(s) assessed by a scale conceived outside the framework of the Authoritarian Personality: i.e., Rokeach's Dogmatism scale (D)³ which was designed

* Received in the Editorial Office, Provincetown, Massachusetts, on April 14, 1971. Copyright, 1972, by The Journal Press.

¹ Orpen, C. Authoritarianism in an "authoritarian" culture: The case of Afrikaans-speaking South Africa. *J. Soc. Psychol.*, 1970, 81, 119-120.

² Orpen, C. Authoritarianism and racial attitudes among English-speaking South Africans. *J. Soc. Psychol.*, 1971, 84, 301-302.

³ Rokeach, M. Political and religious dogmatism: An alternative to the authoritarian personality. *Psychol. Monog.*, 1956, 18, No. 425.

to identify "the individual who possesses a closed, rigid cognitive system." The version used was Troidahl and Powell's short form (20 items)⁴ of the D-scale. The D-scale has been found to be significantly related to the F-scale, but to be "factorially discriminable."⁵ Not only is there positive evidence regarding the construct validity of the D-scale,⁶ but it has been shown to have a negligible relation to the liberal-conservative ideological dimension, unlike the F-scale.⁸ These findings have prompted Rokeach⁸ to argue that "The Dogmatism scale appears to be just about as good a measure of authoritarianism as the F-scale" (p. 27).

Seventy-four English-speaking schoolchildren (average age 16.4) from urban middle-class homes who had been reared in the relatively prejudiced climate of White South Africa^{7, 8} were given the 20-item D-scale, as well as a social distance (SD) and anti-African (AA) measure of prejudice, used previously with White South Africans.² Information was also obtained about the Ss' political party preferences.

Neither of the correlations between the personality dimension of dogmatism and the measures of prejudice were significant at the .01 level (D and AA, $r = .19$, $p > .05$; D and SD, $r = .27$, $p < .05$). These correlations suggest that only about 5% of the variance in prejudice can be ascribed to individual differences in dogmatism. The results support the main hypothesis, that personality factors are relatively unimportant in determining the holding of prejudiced views in settings characterized by prejudiced norms.

Those Ss who support the white-supremist Nationalist party are conforming more closely to the central dictates of the White South African cultural norms than those who support the mildly-integrationist Progressive and United parties.^{7, 8} Hence, the fact that those Ss who preferred the Nationalist party were significantly more prejudiced ($p < .01$) on both measures than those

⁴ Troidahl, V., & Powell, F. A short form dogmatism scale for field studies. *Soc. Forces*, 1965, 44, 211-215.

⁵ Rokeach, M., & Fruchter, B. A factorial study of dogmatism and related concepts. *J. Abn. & Soc. Psychol.*, 1956, 53, 356-360.

⁶ Vacchiano, R. B., Strauss, P. S., & Hochman, L. The open and closed mind: A review of dogmatism. *Psychol. Bull.*, 1969, 71, 261-273.

⁷ Thompson, L. M. Politics in the Republic of South Africa. Boston: Little, Brown, 1966.

⁸ Carter, G. W. The politics of inequality: South Africa since 1948. London: Thames & Hudson, 1958.

who preferred the other two parties, but that the two groups did not differ as regards the personality variable of dogmatism ($p > .05$), also underlines the importance of sociocultural factors.⁹

Department of Psychology
University of Cape Town
Rondebosch, South Africa

⁹ Orpen, C. Prejudice and adjustment to cultural norms among English-speaking South Africans. *J. Psychol.*, 1971, 77, 217-218.

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EFFECT OF THE MAGNITUDE OF REWARD UPON COOPERATIVE GAME BEHAVIOR*

Department of Psychology, University of South Florida, Tampa

DANIEL L. SCINTO, FRANK SISTRUNK,[†] AND DAVID E. CLEMENT

The effects of magnitude of reward upon behavior in a Prisoner's Dilemma Game (PDG) are not consistent, according to recent literature. As the magnitude of reward increases, the amount of cooperation increases,¹ decreases,² or is relatively unaffected.³

In an attempt to resolve this inconsistency, the present study investigated magnitude of reward (real money or game points), sex, and instructional set (individualistic or cooperative) as independent variables in a PDG ($T = 2$, $R = 1$, $P = 0$, $S = 1$). Eighty undergraduate Ss were assigned to like-sex dyads, and played a PDG for 10 trials with no communication between Ss.

A mixed-effects analysis of variance was performed for each of the dependent variables, individual and mutual cooperative choices. The effect of magnitude of reward did not reach significance ($p \leq .05$) for either dependent variable. For individual cooperative choices, instructional set ($F_{1,82} = 4.60$) and trial blocks ($F_{1,82} = 7.93$) were significant, but no other main effects of interactions reached significance. Cooperative instructions led to more cooperation than did individualistic instructions (58.5% vs. 45%), and there was more cooperation in the first trial block than in the second (56.5% vs. 47%). For mutual cooperative choices, the effect of trial blocks ($F_{1,82} = 9.52$) and the interaction of trial blocks with instructional set with sex ($F_{1,82} = 7.71$) were the significant effects. Again, there was more cooperation in the first trial block than in the second (35% vs. 25%). Comparisons among the means of the interaction by the Fisher LSD test revealed that in the first trial block both cooperative groups showed a higher level of cooperation than both individualistic groups (21% vs. 14%). In the second trial block, although the male cooperative

* Received in the Editorial Office, Provincetown, Massachusetts, on June 17, 1971. Copyright, 1972, by The Journal Press.

[†] State University System of Florida, 107 W. Gaines Street, Tallahassee, Florida 32304.

¹ McClintock, C. G., & McNeel, S. P. Reward level and game playing behavior. *J. Conflict Resolut.*, 1966, 10, 98-102.

² Gumpert, P., Deutsch, M., & Epstein, Y. Effect of incentive magnitude on cooperation in the prisoner's dilemma game. *J. Personal. & Soc. Psychol.*, 1969, 11, 66-69.

³ Oskamp, S., & Kleinke, C. Amount of reward as a variable in the prisoner's dilemma game. *J. Personal. & Soc. Psychol.*, 1970, 16, 133-140.

group was more cooperative than the male individualistic group (19% *vs.* 2%), the female individualistic group was more cooperative than the female cooperative group (17% *vs.* 12%). Analyses of first-trial choices and of state-conditioned propensities failed to reveal any significant terms or trends across trials, respectively.

It had been expected that the relatively large amount of money reward used in this experiment (1 point = \$.50) would have had a greater effect upon level of cooperation in the PDG than the magnitudes of reward employed in previous studies. However, the present study generally confirmed the findings of Oskamp and Kleinke⁸ in suggesting no systematic main effect of the level of reward upon the level of cooperation. The primary implication of this study is that previous findings of significant effect of magnitude of reward upon level of cooperation were due to interactions of reward with other variables. Careful multivariate research will be required to determine the particular circumstances under which increases in reward will increase or decrease cooperative behavior.

*Department of Psychology
University of South Florida
Tampa, Florida 33620*

CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 86, 157-158.

THE LACK OF SEX DIFFERENCES IN THE MORAL JUDGMENTS OF PREADOLESCENTS*

Douglass College, Rutgers University

CHARLES BLAKE KEASEY

Underlying the central concern of the Women's Liberation Movement for equality of the sexes is the assumption that there are few immutable differences between males and females. This assumption has resulted in numerous debates over the existence of sex differences in many areas. The area focused upon in the present investigation was that of morality. Freudian theory, of which the movement is highly critical, suggests that the less dramatic resolution of the Oedipal complex experienced by females causes them to have a weaker superego than males.¹ The cognitive-developmental position presented by Kohlberg² would not posit sex differences in moral orientations.

The subjects consisted of 80 boys and 75 girls from four sixth grades at Patterson School, Fremont, California, and one sixth grade at Highland Park Middle School, Highland Park, New Jersey. The California sample ($n = 127$) was from predominantly working-class homes, of average intelligence ($X = 99.3$, $SD = 11.4$) and 78% white, 22% Mexican-American. The New Jersey sample ($n = 28$) was from predominantly middle-class homes,

* Received in the Editorial Office, Provincetown, Massachusetts, on January 15, 1971. Copyright, 1972, by The Journal Press.

¹ Freud, S. Some psychological consequences of the anatomical distinction between the sexes. In J. Strachey (Ed.), *Sigmund Freud Collected Papers* (Vol. 5). New York: Basic Books, 1959.

² Kohlberg, L. Personal communication, March 4, 1969.

of slightly above-average intelligence ($X = 108.3$, $SD = 12.9$) and all white. Four experimenters, two males and two females, all trained in the use of Kohlberg's³ Moral Judgment Interview, individually administered five of the interview situations to each child. Each situation presents the child with a hypothetical moral dilemma in which two culturally acceptable (or unacceptable) alternatives are pitted against each other. Clearly these situations do not have a culturally correct solution, as the concern is not with the child's choice, but with his underlying reasoning for each choice. His reasoning is assessed by a series of predetermined probing questions that are administered with each situation. The child's responses to each situation and its probing questions were recorded verbatim. Their protocols were scored by the author according to the detailed coding procedure devised by Kohlberg. Twenty randomly selected protocols were rescored by a second individual. A correlation of .87 was obtained as an index of interjudge reliability.

The mean moral judgment quotient for girls was slightly higher than that for boys (201 versus 199), but the difference did not approach statistical significance ($t < 1$). This lack of sex differences held true for both the California and New Jersey samples.⁴ These findings are consistent with cognitive-developmental theory and would suggest that during preadolescence males and females do not employ different underlying principles in making moral judgments. Since the Freudian concept of the superego focuses upon rules and prohibitions rather than their underlying reasoning, the above findings do not directly disconfirm Freudian theory.

Department of Psychology

Douglass College

Rutgers University, The State University of New Jersey
New Brunswick, New Jersey 08903

³ Kohlberg, L. The development of modes of moral thinking and choice in the years 10 to 16. Unpublished Doctoral dissertation, University of Chicago, 1958.

⁴ No significant differences were found between the mean moral judgment quotients of white and Mexican-American subjects in the California sample. The finding is similar to that of Fodor⁵ who found no differences in mean moral judgment quotients of black and white adolescent boys.

⁵ Fodor, E. M. Moral judgment in Negro and white adolescents. *J. Soc. Psychol.*, 1969, 79, 289-291.

NAME AND GROUP IDENTIFICATION*

Department of Sociology, State University of New York at Buffalo

TAI S. KANG

In a study of Chinese students at the University of Minnesota in 1967, it was discovered that out of 262 Chinese students registered, 92 or 36.2% of them had anglicized their names. The examination of this striking phenomenon of anglicized first names suggested an analytical scheme to examine such aspects of social life of the group as acculturation, group identification, and patterns of interpersonal interaction.¹

A total of 118 usable completed questionnaires were obtained from a random sample of 170 taken from the Chinese group. The significance of identity change symbolized through name change and their behavioral correlates were examined for the three major areas of institutional life of the Chinese students: socialization, economic activities, and social control.

Hypothesis 1. Name changers are more fully socialized into the host society than nonchangers. As predicted, the changers displayed more of behavioral and psychological affinities toward the host society than the nonchangers in all six subscales of socialization: association with Americans ($\chi^2 = 37.78$, $df = 1$, $p < .01$); familiarity with American magazines ($\chi^2 = 2.74$, $df = 1$, $p < .10$); reading Chinese publications ($\chi^2 = 7.40$, $df = 1$, $p < .01$); acculturation to cultural taste of the host society ($\chi^2 = 3.32$, $df = 1$, $p < .10$); acculturation to cultural values of the host society ($\chi^2 = 2.22$, $df = 1$, $p < .20$).

Hypothesis 2. Name changers tend to work out more flexible and varied economic adjustments than nonchangers. Flexibility in the patterns of economic adjustment between changers and nonchangers was examined in terms of the scores on an employment scale (while collar, skilled labor, unskilled labor, etc.). As expected, an F test [$F = 1.33/.66 = 2.01$, $df = (58, 33)$, $p < .05$] indicated that changers were significantly more flexible in their work arrangements and were less hesitant in taking nonprofessional manual work than nonchangers.

* Received in the Editorial Office, Provincetown, Massachusetts, on January 17, 1971. Copyright, 1972, by The Journal Press.

¹ Stone, G. P. Appearance and the self. In A. Rose (Ed.), *Human Behavior and Social Processes*. Boston: Houghton Mifflin, 1962. Pp. 86-177.

Hypothesis 3. Name changers tend to have closer affiliation toward out-group oriented social control than nonchangers. As hypothesized, changers displayed more of outgroup oriented social control than nonchangers did in two of the three subscales of social control: friends with influence in the campus life ($\chi^2 = .02$, $df = 1$); participation in non-Chinese organizations ($\chi^2 = 2.42$, $df = 1$, $p < .20$); and association with Americans ($\chi^2 = 37.78$, $df = 1$, $p < .01$).

When we examined all of the 19 subscales which measure the three major areas of social life, the ingroup oriented life pattern of nonchangers and out-group oriented life pattern of changers were quite evident in 15 scales (a sign test: significant at .05). The data suggest that change of name represents a significant shift of social identity of the name changer.

Department of Sociology

State University of New York at Buffalo

4224 Ridge Lea

Amherst, New York 14226

THE DEVELOPMENT OF SOME FACTORED SCALES OF GENERAL BELIEFS*

University of Arizona

RICHARD W. COAN, RICHARD W. HANSON, AND ZIPPORAH P. DOBYNS¹

In research reported by Coan,² an inventory of 130 items was devised to cover the realm of general beliefs and attitudes. Factor analysis yielded 17 factors. In subsequent work reported by Hanson,³ additional items were constructed, and expanded and refined scales were developed for the six most promising factors. The resulting revised inventory, entitled General Beliefs, contains 73 items and yields scores for the following factors: (a) conventional theistic religion (high) *vs.* nontheistic viewpoint (low), (b) future-productive *vs.* present-spontaneous orientation, (c) detachment *vs.* involvement, (d) relativism *vs.* absolutism, (e) scientism-determinism, and (f) optimism *vs.* pessimism.⁴

The original inventory was included as part of a six-hour battery in a study of the optimal personality, and it was possible to relate factor scores derived from it to a host of other variables. It was found that women scored significantly higher on factors (a) and (d), while men scored higher on factors (c) and (e). High scores on factor (a) tended to go generally with conventional modes of thought on other measures. High scorers on factor (b) displayed a pervasive emphasis on order, planning, and self-control. Subjects high in detachment appeared to be characterized by a kind of toughness and insensitivity. Relativistic subjects displayed a rather generalized openness to experience of various kinds. Scores on factor (e) were found to correlate positively with scientific and mechanical interests and negatively with social welfare interest. Optimism was found to be particularly related to a high level of experienced personal control.

* Received in the Editorial Office, Provincetown, Massachusetts, on February 25, 1971. Copyright, 1972, by The Journal Press.

¹ The address of the third author is Malibu, California.

² Coan, R. W. The Optimal Personality. In press.

³ Hanson, R. W. General beliefs scales: Toward the assessment of the *Weltanschauung*. Unpublished Master's thesis, University of Arizona, Tucson, 1970.

⁴ A copy of the final version of General Beliefs, with instructions for scoring, may be obtained by ordering NAPS Document 01613 from CCMIC National Auxiliary Publications Service, 909 Third Avenue, New York, New York 10022; remitting \$2.00 for microfiche or \$5.00 for photocopy.

Hanson related scores on the revised scales to a variety of religious, political, and academic variables in a college sample. It was found that Roman Catholics scored highest on the first two scales, and subjects who indicated no preference were lowest. On factor (*d*) Jewish subjects tended to be most relativistic, while Protestants had the lowest mean score. When subjects were classified in terms of political preferences, conservative Republicans had the highest scores on the first two scales, while liberal independents scored lowest. The reverse pattern was found on scale (*d*). Liberal Republicans and liberal Democrats occupied the two extreme positions on factor (*c*). Subjects who favored military escalation in Viet Nam tended to score high on conventional theistic religion, productiveness, and optimism, while those who favored immediate withdrawal of American forces scored low on these scales. High scores on detachment, on the other hand, were found to be associated with an intermediate, and perhaps less decisive, position of gradual disengagement.

Scales (*d*) and (*e*) showed a marked relationship to chosen college majors, with engineering and fine arts students displaying the most extreme patterns. Engineering students tended toward absolutism and scientism-determinism, while fine arts students tended toward the reverse pattern. All the research findings at present are based on data gathered from university student samples. It will be interesting to see whether comparable relationships will appear in other populations.

Department of Psychology
University of Arizona
Tucson, Arizona 85721

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Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
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College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
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Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
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Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indut.</i>	Teacher	<i>Teach.</i>
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28

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(Manuscripts are printed in the order of final acceptance)

A comparison of the structure of behavioral maturity between Japanese and American primary-grade children	167
BY ALLYN PRICHARD, W. L. BASHAW, AND HARRY E. ANDERSON, JR.	
"Black suicide": A report of 25 English cases and controls	175
BY CHRISTOPHER BAGLEY AND STEVEN GREER	
Children's judgments of age in Sarawak	181
BY WILLIAM R. LOOFT, JACK R. RAYMAN, AND BARBARA B. RAYMAN	
An improved definition, from 10 researches, of second order personality factors in Q data (with cross-cultural checks)	187
BY RAYMOND B. CATTELL AND K. ERNEST NICHOLS	
Child-rearing attitudes of Chinese, Jewish, and Protestant mothers	205
BY SARA FINN KRIGER AND WILLIAM H. KROES	
Attitudinal points of agreement and disagreement	211
BY GEORGE S. ROTTER	

(OVER)

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Authoritarianism, creativity, success, and failure among adolescents BY RACHEL T. HARE	219
Helping behavior as a function of interpersonal perception BY RICHARD G. GRAF AND JEANNE C. RIDDELL	227
Effects of economic threat on anomia and perceived locus of control BY RAYMOND N. WOLFE	231
Responses to persistent social interference: A response hierarchy of influence tactics in social exchange BY BRUCE A. CHADWICK AND ROBERT C. DAY	241
Deviancy and choice in cooperative and punishment situations BY KNUD S. LARSEN	247
Attitudinal affect and behavioral intentions BY KEITH M. KILTY	251
Delinquency and susceptibility to social influence among adolescents as a func- tion of level of moral development BY EUGENE M. FODOR	257
Personal space as a predictor of performance under close working conditions BY JAMES R. RAWLS, RONALD E. TREGO, CHARLES N. MCGAFFEY, AND DONNA J. RAWLS	261
Fear, anxiety, and affiliation following a role-played accident BY JAMES M. DABBS, JR. AND ROBERT L. HELMREICH	269
Some effects of dress cues on observational accuracy, a perceptual estimate, and impression formation BY PAUL N. HAMID	279
Effect of individual achievement motivation on group problem-solving efficiency BY FRANK W. SCHNEIDER AND JAMES G. DELANEY	291
The effects of age and cultural familiarity on children's categorization responses BY ROBERT J. WIEMAN AND GEORGE M. GUTHRIE	299
CROSS-CULTURAL NOTES	
Intelligence, extraversion, and neuroticism in relation to season of birth BY SURESH KANEKAR AND SUMITRA MUKERJEE	309
Drawing ability of Soli rural children: A note BY JAN B. DEREGOWSKI	311
REPLICATIONS AND REFINEMENTS	
Conformity in college men and women as a function of locus of control and prior group support BY RICHARD M. RYCKMAN AND WILLIAM C. RODDA	313
The factorial invariance of attitudes toward people (ATP) BY GOTTLIEB C. SIMON	315
The relationship between specific psychology classes and maladjustment—A replication study BY BLAIR R. SWANSON AND ROBERT J. HOWELL	317
CURRENT PROBLEMS AND RESOLUTIONS	
Alienation in an Australian university BY J. J. RAY AND A. J. SUTTON	319
Effects of involvement on petition signing BY MORTON GOLDMAN	321
BOOKS RECENTLY RECEIVED	323

A COMPARISON OF THE STRUCTURE OF BEHAVIORAL MATURITY BETWEEN JAPANESE AND AMERICAN PRIMARY-GRADE CHILDREN*¹

University of Georgia

ALLYN PRICHARD, W. L. BASHAW, AND HARRY E. ANDERSON, JR.

A. INTRODUCTION

The nature of behavioral maturity and its role in school achievement among American primary and preprimary children have been studied extensively. Behavioral maturity of American children has been described in terms of three major sets of behavioral goals—academic maturity, emotional maturity, and interpersonal maturity (6). The relationship of these aspects of maturity to school achievement has also been discussed (7). These three maturity factors have been identified in American children as young as four years old, and two of the factors—emotional and interpersonal—have been found in three-year-old American children (7).

The three-factor maturity structure among American children appears quite stable, having been found independently in four sets of data. The first study cited presents highly similar results for black and white primary-age subjects, while the third study cited presents results for four- and five-year-olds. All four sets of data yield nearly identical three-factor structures. A fifth set of data, consisting of three-year-old children, was also described in the third study. The academic factor failed to appear in this fifth set of data.

The exploration of behavioral maturity in non-American cultures will determine the degree to which results in the cited studies can be generalized. The problem of searching for similar maturity factors in other cultures is risky, since socialization in each culture has some unique features. Instruments developed for use in one culture and translated for use in a second culture will most likely be different from instruments developed specifically for the second culture.

* Received in the Editorial Office on February 22, 1971, and given special consideration in accordance with our policy for cross-cultural research. Publication delayed for technical reasons. Copyright, 1972, by The Journal Press.

¹ The research and development reported herein was performed pursuant to a contract with the United States Department of Health, Education, and Welfare, Office of Education, under the provisions of the Cooperative Research Program. This research was conducted by the Evaluation Division of the Research and Development Center in Education Stimulation.

Certainly, the traditions of each particular ethnic group exert their influence on the behavior patterns of the children in that culture, and tend to mold them into the type adult who possesses locally acceptable values in terms of social relationships. Examples of this range from superficial variations in expressions of pleasure and gratitude to a deeper, philosophical definition of an individual's life style, which may be easily seen when our own frequently hurried, abrupt American concepts of interpersonal relations are compared with the more formal, less demonstrative social interaction patterns of many Oriental countries.

Kim, Anderson, and Bashaw (8) have discussed the relationship of behavioral maturity of Korean second graders to Americans. The Korean structure of maturity was similar to the American structure, but some major differences in structure were obtained.

The purpose of this study was to determine the relationships between the various aspects of maturity and school achievement in Japanese primary age children. Kim, Anderson, and Bashaw (7) report that academic maturity relates more highly to American second-grade achievement indexes than standardized intelligence and achievement scores. This pattern was anticipated in Japanese schools. A second purpose was to compare the structure of behavioral maturity of Japanese second-graders to American second graders.

B. THE CHILD BEHAVIOR SCALE

The development of the Child Behavior Scale (CBS) has been described by Kim, Anderson, and Bashaw (6). The scale was based on the work of Doll (3), Pechstein and Munn (9), Beller (2), Kearney (5), and Gesell and Ilg (4). It consists of 18 items, six each for the three factors Emotional Maturity (EM), Academic Maturity (AM), and Interpersonal Maturity (IM). The items are listed in Table 1. Each item has been judged by teachers to be a stimulus to which they could respond validly and which is not a source of embarrassment to the teacher, child, or child's family. Teachers respond to each item by rating the child on a seven-point scale with defined terminal anchors.

The Japanese form of the CBS was developed by first translating the items into phonetic, Romanized Japanese, so that both the senior author, who spoke but could not write Japanese, and Japanese school officials could agree on the wording of the items. This version of the scale was translated into Kanji by a Japanese senior-high-school English teacher. All 18 items were reproduced on a single page and were grouped according to the factors EM, AM, and IM.

C. METHOD

1. Sample

Two elementary schools were randomly selected in Takaoka, a city of approximately 150,000 people. Both second-grade classes in each of the two schools were utilized, and a random sample of 25 students was selected from each of the four groups. Thus, the total number of subjects was 100. The median age of the children was 8 years, 0 months. Their *IQ* scores, measured by a test approved for use by the Japanese Ministry of Education, ranged from 68 to 140 with a mean of 101 and a standard deviation of 12.2.

2. Analyses

The structure of maturity was examined by factor analysis. Analytic procedures were identical to those used in the American scale development so that methodological differences were avoided. The analysis consisted of a principal component factor analysis using unities on the diagonal of the intercorrelation matrix. Three factors were rotated to the varimax criterion. The obtained factor structure was compared to the American structure [reported in Kim, Anderson, and Bashaw (6)], by calculating coefficients of congruence.

In addition to the CBS data, grades were obtained for each child in the areas of Japanese, social studies, mathematics, science, music, physical education, and art. An overall grade was also obtained. Factor scores for AM, EM, and IM were calculated by summing scores on the relevant six items. The reliabilities of these scores, estimated by alpha coefficients, were .92, .90, and .88, respectively. The intercorrelations of all grades, intelligence, AM, EM, and IM were obtained.

D. RESULTS AND DISCUSSION

The factor structure of behavioral maturity and the communality of each item appear in Table 1. The eigenvalues for the three unrotated factors were 8.28, 2.36, and 1.90, respectively. The proportion of total variance explained by the three factors was 70%.

Each item had its highest loading on the appropriate factor. A clear simple structure was obtained as each factor had few loadings above .3 for items other than the appropriate six items. AM and EM both had only two inappropriate loadings above .3, and IM had only three such loadings. Only one item had loadings above .3 on all factors.

The mean scores for each of the 18 items (not presented) were all about 3.1. All standard deviations were about .8.

TABLE 1
THE FACTOR STRUCTURE OF BEHAVIORAL MATURITY FOR
SECOND-GRADE CHILDREN ($N = 100$)*

Items	Factors			
	AM	IM	EM	Λ^2
1. He can work alone for a period of time.	812	151	282	762
2. He returns to a task unfinished from the previous day and develops it.	833	183	252	790
3. He carries his activities to completion.	756	201	319	714
4. He carries out brief individual assignments in school without supervision.	776	315	208	745
5. He reads on own initiative.	841	099	049	720
6. He enjoys books, newspapers, and magazines.	821	136	045	694
7. He enjoys team games, group games.	207	711	103	559
8. He makes friends quickly and easily.	119	799	201	694
9. He takes part in competitive games.	058	795	012	635
10. He takes initiative at play or in classroom.	281	789	219	749
11. He is friendly toward other people.	122	772	327	718
12. He assumes group leadership for a given activity.	290	800	220	773
13. His remarks about others are kind; that is, not saying things to hurt other's feelings.	161	261	787	713
14. He reacts properly to teacher's approval or disapproval.	413	360	612	675
15. He is inclined to sympathize rather than laugh at those in difficulty.	144	411	655	619
16. He remains calm when he cannot get what he wants.	370	220	659	620
17. He can lose with grace (fair play).	165	089	839	739
18. He knows how to take turns at games, talking, and in the use of facilities.	075	029	782	618

* All decimals omitted.

Coefficients of congruence, displayed in Table 2, indicate the relationship between the Japanese and American second-grade factor structure. The off-diagonal elements of Table 2 approximate in magnitude the factor score intercorrelations that appear as part of Table 3 of this report and appear as part of Table 1 of Kim, Anderson, and Bashaw (7) for American second graders. Thus, Table 2 indicates nearly perfect agreement between American and Japanese structures.

A major disadvantage in applying an instrument developed in one culture to persons of a second culture has already been pointed out. If the original 42-item pool had been administered in Japan, quite likely a different final scale would have resulted. A competing method for cross-cultural study is to administer a common item pool in both (or several) cultures. Scales would be constructed by choosing items that were most important in both (or all) cultures. Therefore, this study is best interpreted as a comparison of Japanese performance

TABLE 2
COEFFICIENTS OF CONGRUENCE RELATING JAPANESE AND AMERICAN
FACTORS OF SOCIAL MATURITY

Japanese factors	American factors		
	AM	IM	EM
AM	.974	.562	.601
IM	.574	.958	.568
EM	.585	.514	.969

in terms of behavioral objectives relevant to American children. A scale prepared especially for Japanese might contain, for example, items relating to formal politeness on which the ratings for American children might be quite low.

There always exists the possibility that scale format could create response sets affecting factor structure. Each child was rated on all items at one time (rather than rating all children on one item before going to a second item), and, moreover, items were grouped by subscale. Therefore, there is some reason to suspect that halo effect could account for the obtained structure. This suspicion has been discounted, since the original structure was obtained in both American black and American white samples with randomly ordered lists of items. Moreover, in studies involving Korean subjects, performance on items ordered and grouped exactly as described here did not result in the structure reported in Table 1. Also, the Korean structure was obtained on scales organized like the Japanese scale and on scales organized randomly (8).

Table 3 presents the intercorrelations of maturity factors, intelligence, and achievement indexes. The maturity factors are seen to be consistently more highly related to school achievement than is intelligence. AM is related more highly to all achievement indexes (other than physical education) than any other maturity variable. The highest correlate of physical education is IE, a result is predictable from examining the IE items. The high correlation between EM and Social Studies (.61) probably reflects the nature of social studies at this age level.

The relatively low intelligence test validities are not inconsistent with American findings. Kim, Anderson, and Bashaw (7, Table 1, p. 537) report second-grade validities for verbal and nonverbal Otis Quick-Scoring Mental Maturity Tests in the range of .33 to .40 for teacher grades and .30 to .43 for standardized tests.

The report cited above also showed that AM correlated more highly than Otis Verbal Intelligence with five of six standardized achievement measures,

TABLE 3
INTERCORRELATIONS OF ALL VARIABLES (N = 100)*

	IQ	AM	IM	EM	Japanese studies	Social studies	Math	Science	Music	Art	Physical education	Area totals
IQ	1000											
AM	317	1000										
IM	376	490	1000									
EM	316	517	538	1000								
Japanese studies	421	750	460	544	1000							
Social studies	374	615	409	608	714	1000						
Math	424	646	393	439	706	622	1000					
Science	429	586	285	393	723	664	639	1000				
Music	088	542	421	473	535	471	541	402	1000			
Art	280	517	371	380	475	462	336	357	368	1000		
Physical education	265	282	418	236	215	180	287	182	289	245	1000	
Area totals	481	762	544	614	849	815	800	766	685	637	444	1000

* Decimals omitted. Correlations above .20 are significant at the .05 level.

as well as all of three teacher-grades indexes. Therefore, the finding among Japanese students that the maturity scales generally correlate with teacher grades more highly than does intelligence cannot be attributed entirely to teacher biases affecting both grade ratings and CBS ratings. One can interpret these findings as supporting the contention that teachers include relevant behavioral maturity factors, as well as cognitive factors, in their grade assignments at the primary level. In any case, there is evidence that CBS can be used in America or Japan for quick indexes of academic performance.

E. SUMMARY

The structure of behavioral maturity among Japanese second graders was studied with the Behavioral Maturity Scale, an instrument developed for American primary-grade use. The factor structure of Japanese behavioral maturity was essentially the same as the structure found when several independent American samples were used. The major components of maturity were academic, emotional, and interpersonal maturity. Correlations of these factors with achievement indexes were quite high relative to correlations of intelligence with achievement.

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Department of Educational Psychology
325 Aderhold Building
The University of Georgia
Athens, Georgia 30601

"BLACK SUICIDE": A REPORT OF 25 ENGLISH CASES AND CONTROLS*

*Centre for Social Research, University of Sussex; and Medical Unit,
King's College Hospital, University of London*

CHRISTOPHER BAGLEY AND STEVEN GREER

A. INTRODUCTION

A recent study by Hendin, titled *Black Suicide*, was published in Britain in 1970 (6) and claimed to be a major study of suicide among U.S. blacks. This book, however, is based on a brief examination of the official suicide statistics, and on psychoanalytical reasoning about 25 black subjects, 13 women and 12 men, admitted to hospitals following suicide attempts. No account is given of the selection of material, and neither black nor white control subjects are used. Hendin argues that the suicide rate is a barometer of the pressures felt by all blacks in America, and that the problems of his 25 subjects, "hold an enlarged mirror up to the frustration and anger of the black ghetto . . . their problems vary only in degree from those of large masses of urban blacks" (6, p. 4).

If suicide rates did reflect the condition of urban blacks in America, we would expect the rates of suicide in blacks to be much higher than in whites at all age levels. An examination of American suicide statistics (7) shows that this supposition is insecurely based. The age-adjusted suicide rate in America in white males between 1950 and 1964 has consistently been nearly twice as high as the suicide rate in black males, but is, in turn, consistently about twice the rate in black females who have the lowest rate of all. The highest rate achieved by any black group is in males aged 25-34, at 16.2 per 100,000; the rate in the same year (1964) for black males aged 65-74 was 12.5. The comparable figures for white males were 17.0 per 100,000 in the age group 24-34, and 39.1 per 100,000 in the age group 65-74. In New York, where Hendin's study was based, the rate in blacks aged 25-34 at 9.5 per 100,000 (for the three years 1959-61) is slightly higher than the rate in whites in this age group, 7.9 per 100,000. The rate for whites in all age groups in New York (at 8.7) is, however, higher than the rate for blacks in all age groups (at 6.6).

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These data do not support Hendin's assertion that suicide patterns reflect black alienation. Not only is the rate in blacks in almost all age groups lower than that in whites, but the overall rate itself is not high.

B. A STUDY OF 25 ENGLISH CASES

It is, of course, easy to criticize another study on methodological grounds, but far more difficult to mount an adequate study oneself. We, therefore, set out to design a study that could investigate a sample of "black suicides" using an epidemiological case-finding technique and at the same time comparing background factors in the cases ascertained with those in a matched control group of native-born whites.

Our own study discovered 25 black suicides (two completed and 23 recovered suicides) in the course of a hospital-based enquiry which also studied the efficacy of psychiatric treatment in attempted suicides (5). During the first six months of 1968, 206 consecutive admissions to a casualty department in a South London teaching hospital were followed up over an 18-month period. Admission policies ensured that our sample covered all the medically treated suicide attempts in this area.

Approximately 10 percent of the adult population in the area served by the hospital is "black" (from the colored Commonwealth areas of the Caribbean, Africa, India, Pakistan, and Cyprus). We use the generic term "black" following Thomas' definition (9, p. 5); " 'Black' refers to those people in the world who lack economic power and who do not control their own destinies, i.e., the oppressed; and 'white' refers to the oppressors. Within this category of 'black' people there is a subcategory of people whose skin color is 'black' who are visibly African and who are easily identifiable (by the oppressors)." It is known that the incidence of racial prejudice and discrimination in this area is high (2). An epidemiological study of mental illness in the area has shown high rates in some ethnic groups (3), and a replication of Parker and Kleiner's important American study (8) has indicated that status-striving in a climate of limited opportunity can be an important precursor of schizophrenia in West Indians (1). In the present series the largest single group (48 percent) were from the Caribbean; 20 percent were from India and Pakistan; and 16 percent in each case from Africa and Cyprus.

Two analyses of our data on "black suicide" were carried out. First of all, the 23 attempted suicide cases were included in a correlation and multiple regression analysis of 30 social and clinical variables relating to the attempt and its treatment. These variables included primary and secondary psychiatric diagnoses, which were made by a psychiatrist according to standard W.H.O.

criteria. These diagnoses included schizophrenia, depression, and personality disorder of various types. Also included in the matrix were demographic variables, the circumstances and seriousness of the attempt, types of treatment the patient received, and long-term outcome after treatment.

Three significant correlations of being black emerged: (a) Age ($r = -.24$, $p < .01$) indicated that the black suicides, with a mean age of 20.2 years, were significantly younger than the other patients, mean aged 27.7 years. (b) A diagnosis of acute situational stress (.27, $p < .01$) indicated that the unsuccessful black suicides were particularly likely to have no formal psychiatric diagnosis, but to be reacting to acute environmental stresses. Very often these involved family crises, such as the threatened departure of a spouse. Our detailed enquiry into these cases indicated that very often other factors underlay these crises, such as unemployment, poor housing, family pressure, and debt. (c) The third significant correlation was that of being discharged from the hospital without psychiatric treatment (.17, $p < .05$).

Multiple regression analyses with repeated attempted suicide as the dependent variable were carried out for all the cases, and separately for each of three treatment groups—no psychiatric treatment, brief therapy, and prolonged psychiatric therapy (4). The variable of being black made no significant contribution to the multiple regression analysis when all cases were considered, but in the untreated cases was significantly associated with repeated attempted suicide ($r = .28$) when all other variables were controlled.

In order to control for the effect of demographic variables, age, sex, and marital-status, matched controls from the white attempted-suicide group were obtained for the 25 black suicides (including the two successful cases). Diagnostic comparisons between the two groups showed that 48 percent of the black suicides had been classified as acute situational reaction, compared with 12 percent of controls. Twelve percent of the white controls were diagnosed sociopathic, or addicted to drugs or alcohol, compared with none of the black cases; 24 percent of the white controls were psychotic or brain-damaged, compared with 8 percent of the black cases.

Suicide in adolescents is a rare phenomenon, and it is of interest that the two completed suicides in our series were a girl of 14 and a boy of 15, and were both black. The girl was involved in an adolescent conflict with her parents on the issue of independence. Family life itself was marked by neurotic interaction, and the mother, diagnosed as an hysterical personality, attempted suicide the day following her daughter's funeral. The 15-year-old boy appeared to be depressed and withdrawn before his successful attempt, and was involved in interpersonal conflicts with his stepfather.

The picture that has emerged from this study of 25 black suicides was one of a population of fairly recent migrants (which accounts for their being younger than the white comparison group). Facing multiple problems, the black suicides were particularly likely to be reacting to environmental stresses, especially those associated with interpersonal and material aspects of family life. There was a significant tendency for the unsuccessful black suicides to be treated cursorily by hospital authorities, and these patients denied psychiatric and social support were significantly more likely to repeat an attempt.

C. SUMMARY

Hendin's work on black suicide in New York has been criticized on methodological grounds—the failure to use an unbiased method of case-finding and the lack of control subjects. Hendin's argument that black suicide reflects the strains of ghetto life has also been criticized, on the grounds that in almost all age groups the white suicide rate is higher than the black rate.

Twenty-five English cases of black suicide (two of them successful) obtained by an epidemiological method have been described. The findings were as follows:

1. Black suicide was significantly associated with younger age; diagnosis of acute situational stress; and being discharged by hospital authorities without psychiatric referral.

2. When age, sex, and marital status were controlled, the black suicides displayed markedly more acute situational reactions than controls, and somewhat fewer pictures of more serious psychiatric illness.

3. Being black was a significant predictor of repeated attempted suicide in patients who did not receive psychiatric and social support at the time of their initial suicide bid.

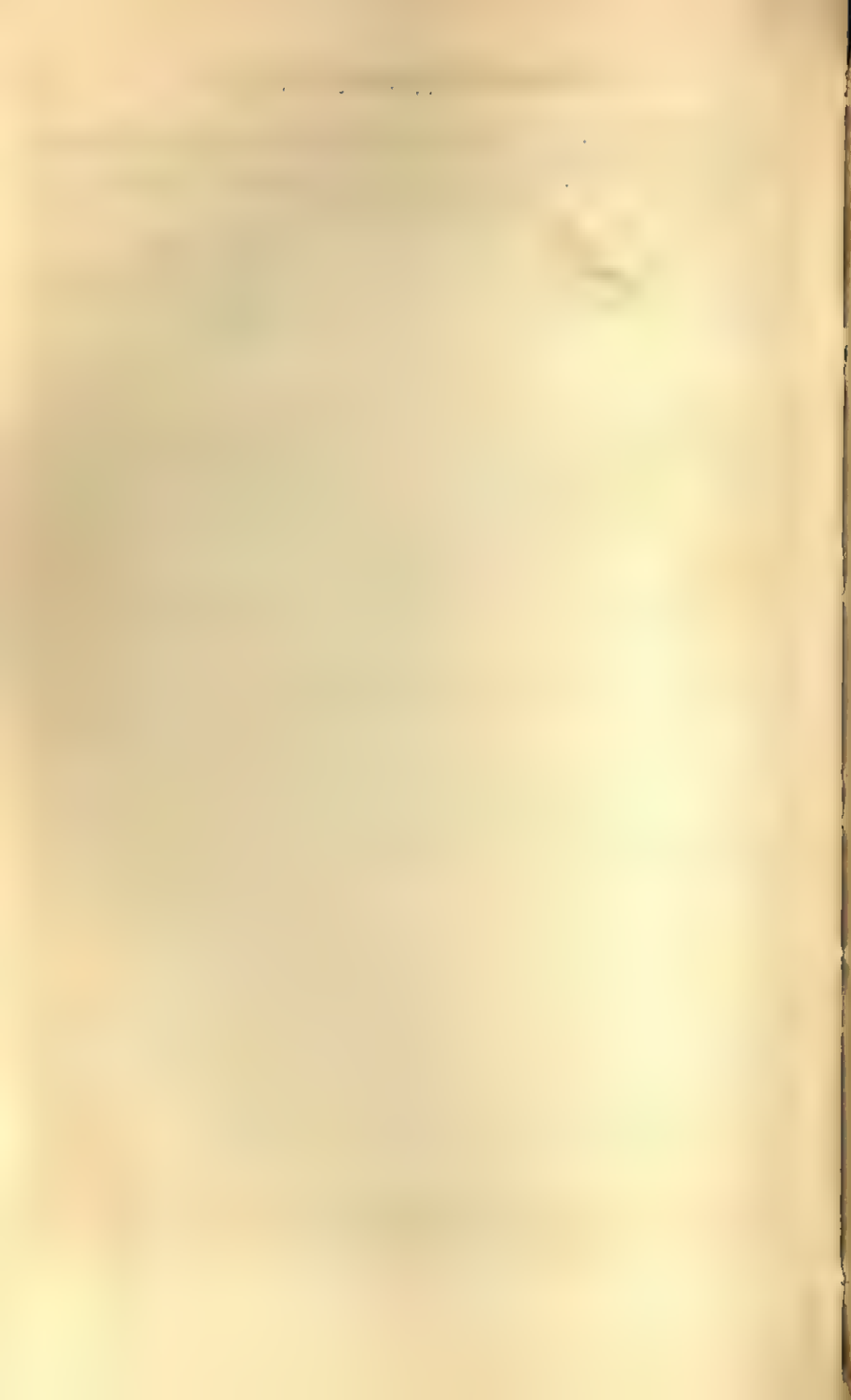
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Centre for Social Research
University of Sussex
Brighton
England

Medical Unit
King's College Hospital
London, S.E.5
England



CHILDREN'S JUDGMENTS OF AGE IN SARAWAK*

*Department of Educational Psychology, University of Wisconsin; and
College of Education, University of Iowa*

WILLIAM R. LOOFT, JACK R. RAYMAN, AND BARBARA B. RAYMAN

A. INTRODUCTION

Children living in the American culture become aware sometime during the first two or three years of life that there is a correlation between the physical size of people and their age. A child seems to reason that the taller of two persons must of necessity be the older, and the taller one is, the older he must be. Britton and Britton (1) found that American preschool children were not able to order correctly by age a series of pictures representing persons at various points across the life span. In a recent study by Looft (2) perceptions of age were systematically investigated in American children of ages three through nine years. Subjects were shown two sets of drawings of human figures depicting typical physical characteristics of the infant, child, adolescent, and middle-aged adult; the figures were reproduced in two sizes (large, small) and presented in a paired-comparison procedure. Children's accuracy in determining the older of the two figures on each stimulus card increased linearly over the seven age levels. The younger children's errors were due to their perseveration on one attribute of the figures—height. This perceptual feature of the drawings appeared to be so overwhelming that all other visual cues were rendered insignificant. Older children made increasing use of other physical features in making their age judgments.

The present study was an attempt to determine the characteristics of age judgments by children in a non-American culture—Sarawak, of the Federation of Malaysia.

B. METHOD

1. *Subjects*

The subjects were school children in a rural school in the state of Sarawak in Malaysia. Because very young children were generally unavailable for testing purposes, it was not possible to replicate the age range of the Looft

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(2) study. Furthermore, the recorded ages of the children ultimately tested were only approximations, for in most parts of Sarawak birth registration practices are still rather casual. Most of the children seemed to know the year of their birth, but few knew of their specific birthdate. Consequently, it was decided to group the subjects together into two broad age ranges, since it was impossible to classify the children into narrower, more precise age levels. Fifteen children—nine males (M), six females (F)—were interviewed in the approximate age range of eight to 10 years, and 18 (10 M, eight F) were included in the age span of 11 to 13 years.

Children of several racial groups attend this school and were included in the present sample. Twenty-two of the subjects were Malays, six were Chinese, and five were Ibans (or Sea Dyaks).

2. *Stimuli*

The drawings employed in this study were adapted from those used originally by Looft. They represented males at four levels of the life span: infant, child, adolescent, middle-aged adult. Only one sex was used in order to avoid confusion over differential perceptions of that variable as it relates to age. The figures were drawn with only towels draped around their waists to allow the observation of relevant physical cues. The drawings were photographically reproduced in two sizes, 3 1/2 inches high and 5 1/2 inches high (of course, all dimensions were expanded proportionately). Thus there were eight different figures in all (four ages, two sizes), and these were paired into 28 different combinations. All possible pairs were formed with the exception of the same figure at the same size. Each of the picture pairs was mounted on a 9-inch by 12-inch card. The placement of the drawings on the cards (left-right, older-younger) was randomized.

3. *Procedure*

The children were tested by the second and third authors at the children's school. Each subject was shown one stimulus card at a time, and was asked to decide which of the two figures on each card was the "older person," or whether they were both of the same age. Both naming and pointing were allowed for the child's responses. Frequently the subject was asked to explain the particular answer he gave. The order of presentation of the 28 cards was randomized for each subject. Since the medium of instruction in Sarawak schools is English, the children were interviewed in English. Occasionally communication in English was difficult, and in those cases the child's native language (Malay, Sea Dyak, or a Chinese dialect) was used.

4. Measures

The two dependent measures were *accuracy* (the total number of correct responses given by each subject) and the number of *size responses* (that is, the choice of the larger figure in a pair when that figure represented an incorrect judgment). Thus, the maximum accuracy score was 28; the maximum size score was 10, for this measure concerned only certain of those pairs in which the figures were presented in different sizes (six of these cards had different figures presented at different sizes, and the other four contained the same figure presented at different sizes). The size measure was an error score; it did not incorporate those cards in which the older figure appeared as the larger figure. Thus, there existed a dependent relationship between the two measures: A maximum accuracy score of 28 necessitated a zero score on the size measure.

C. RESULTS AND DISCUSSION

Because of the inability to obtain identical numbers of children at each of several age levels and because of the impossibility of determining precisely the chronological age of a number of the subjects, it seemed inappropriate to submit our data to highly sophisticated trend analyses. Consequently, the sample was divided into two three-year age groups (8-10, 11-13), and the respective performances of these groups were compared to ascertain the existence of rather gross age differences.

The older group ($\bar{X} = 17.7$, $SD = 4.02$) demonstrated greater ability to make accurate judgments of age than did the younger group ($\bar{X} = 13.8$, $SD = 4.41$); this difference was statistically significant ($t = 2.18$, $df = 31$, $p < .05$). In Looft's study (2) with American children, scores on this accuracy measure ranged from 11.4 for three-year-olds to 22.6 for nine-year-olds.

On the second measure, size responses, the age difference again favored the older children ($\bar{X} = 4.61$, $SD = 2.70$) over the younger ($\bar{X} = 6.67$, $SD = 2.89$), $t = 2.10$, $df = 31$, $p < .05$. That is, the younger children showed a greater tendency to indicate the larger of two figures on a card to be the older when in fact this was not the case. For example, in the pair consisting of the small adult figure and the large infant figure, the subject judged the infant to be the older. Another possibility involved those cards containing the same figure drawn at two sizes; if the child indicated the large adolescent, for example, to be older than the small adolescent, then it was apparent he was making his decision on the basis of size. The correct response would have been

a recognition that they were the same figure (and thus the same age), but were merely presented at two different sizes.

There were no differences among the three racial groups on either of the two dependent measures.

The explanations that were elicited from the children by the examiners provided some insight into the logic of the children's decision-making processes. Typical comments obtained in the earlier study with American children (2) were "He's taller" and "He has to be big to be older." Similar comments were given by these Sarawak children. Fifteen subjects (45%) used the term "taller" in their explanations. However, some marked differences were found in the Sarawak accounts, in contrast to the American children's interpretations. Fifty-five percent of the Sarawak children used the word "stronger" at some time or other in their verbalizations; this term was never offered by the American children. An even more common form of explanation by the Sarawak subjects was to point out differences in the "fatness" of the figures. Sixty-four percent of these children mentioned the degree of fatness or thinness in the explication of their responses; in the American sample, physical descriptions of the human figures almost always pertained to height, never to weight. This cultural difference seems best accounted for by consideration of the status and occurrence of obesity in Sarawak (and in Asia, generally). Because of the nature of their prenatal nutrition, most babies born in Sarawak are not fat but rather rangy. The fat person in this culture is generally perceived as one who has accumulated considerable wealth—enough wealth to allow him to eat well and to engage in a minimum of activity requiring manual labor or strenuous exertion. Few people prior to middle age are able to accumulate sufficient wealth permitting corpulence; consequently, most people in this culture associate fatness with older individuals rather than with babies, as is typical in American culture. Thus, in the present study, it was not uncommon for a subject to judge that the infant figure (which had a rather protruding belly) to be older than the adolescent figure and to explain that the infant was "bigger and fatter."

D. SUMMARY

Children in the Malaysian state of Sarawak made age judgments on drawings of human figures. The stimuli consisted of four different male figures drawn according to typical physical characteristics of the infant, child, adolescent, and middle-aged adult. The figures were reproduced in two sizes and were presented in a paired-comparison procedure. Older children in the sample were more accurate in determining the older of the two figures on each

stimulus card than were the younger children. The subjects' explanations for their judgments revealed the importance of fatness and strength in their decisions. Comparison of these findings was made with those from a similar study with American children.

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Department of Educational Psychology
The University of Wisconsin
432 North Murray Street
Madison, Wisconsin 53706

College of Education
University of Iowa
Iowa City, Iowa 52240



AN IMPROVED DEFINITION, FROM 10 RESEARCHERS,
OF SECOND ORDER PERSONALITY FACTORS IN
Q DATA (WITH CROSS-CULTURAL CHECKS)*

*Department of Psychology, University of Illinois; and Department of Development
and Research, Calgary School Board, Alberta, Canada*

RAYMOND B. CATTELL AND K. ERNEST NICHOLS

A. STATE OF KNOWLEDGE IN THIS AREA

Although disputes about the number and nature of primary personality factors in questionnaire data are still rife, there is promise of some agreement about the second order, notably in the work of Sells, Demaree, and Will (40) and that of the present writer and his colleagues (see below), as well as (to the extent that identification by items permits) in that of Eysenck and Eysenck (20).

Since there are weaknesses in factoring by items, rather than by scales or parcels (3), it is to be hoped that second strata factor matching can soon be based on a representative set of scales, regardless of agreement as to which set of scales best represents the real primaries. Translations to agreed primaries can be made later. Meanwhile, the demonstration that there are 16 dimensions in the 16 P.F. and that they span much the same space as the Guilford-Zimmerman (13) and the MMPI (9) suggests, at any rate, that we have here a sufficiently comprehensive basis for seeking the main second stratum basis.

Parenthetically, it must be added that while this is the broadest existing foundation on which more than two or three second stratum analyses have ever been made (actually some 24 have now been made on this set of scales), it is already known that it does not subtend the full roster of primaries. After 20 years of search for extra dimensions beyond the 16 presented in scales in the 16 P.F. in 1949, some 12 further primaries—six normal, six in abnormal behavior—have recently been checked (9, 10); and a first analysis at the second order on this broader basis is in press (11). Meanwhile, the accumulated results of large sample studies on the existing 16 P.F. primaries over many years permits us, at this point, to reach relatively precise and well

* Received in the Editorial Office, Provincetown, Massachusetts, on December 10, 1971, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1972, by The Journal Press.

checked findings on that part of the second order domain that rests on the 16 P.F. primaries.

It is not proposed here to make a survey and averaging of results from all extant researches, but only of 10 studies that are adequate in sample size and consistent in methods of factoring and rotation—namely, with iterated communalities and maximum oblique simple structure. (For there is no good scientific reason to expect agreement from analyses on different principles—e.g., on orthogonal pseudo-simple structure and oblique maximized simple structure, or on broad and on specifically highly selected samples. However, it is appropriate to bring to the reader's notice the wider variety of approaches, as in Gocka and Marks (22); Hundleby and Conner (25); Jenkins (26); Karson (27, (28); Karson and Wiedershine (33); LaForge (35); Michael, Barth, and Kaiser (36); Mitchell (37); O'Dell and Karson (38); Tollefson (41); White (43). Some analyses of their internal consistency should be made and compared with that found here. Those we compare and discuss here have been both on independent and adequate size single samples [Cattell (2), $N = 408$; Cattell (6), $N = 209$ and 296 ; Cattell, Eber, and Tatsuoka (18), $N = 423$ and 535 ; Cattell and Nesselroade (15), $N = 446$; Cattell and Scheier (16); Cattell and Warburton (17), $N = 202$ and 604 ; de Andrade, de Godoy, and Ford (19), $N = 1325$; Horn (24), $N = 172$; Karson (29), $N = 96$ and (30), $N = 124$; Karson and Haupt (31), $N = 300$; Karson and Pool (32); Krug and Kulhavy (34), $N = 1000$; Tsujioka and Cattell (42), $N = 300$] and a single large composite group [Gorsuch and Cattell (23), $N = 1652$].

The agreement as to the number of factors, the factor loading patterns, and the correlations among second stratum factors has been very good by simple structure methods, even across different countries, sexes, and socioeducational levels. It has also been good between the two alternative methods of approach—through (a) correlations among primary scales, and (b) correlations among the pure factors from a simple structure obtained in a first order analysis from items, etc. The resulting emergent second order concepts of anxiety, extraversion (the determinate core in the popular notion of extraversion-intraversion), introversion, independence, etc., have also shown a revealing alignment with factors in objective tests (Universal Index 24, U.I. 32, and perhaps U.I. 22 and U.I. 19, respectively). They have also already been used as independent and dependent variables in a wide array of experimental researches and criterion predictions.

The present contribution aims to organize new findings from 10 further researches—constituting the first major survey in this area—to introduce

some more rigorous tests of matching significance, and to discuss some points of importance for personality theory.

B. THE DATA

It is part of the design of this study also to compare the degree and nature of the agreement reached when population samples differ in certain systematic ways, notably sex, age, and culture. Specifically, we shall examine (*a*) differences due to sex, with young American adults as subjects; (*b*) differences of culture uncomplicated by differences of language and associated translation problems, between New Zealand and American young adults; (*c*) differences both of national culture and language (American, German, New Zealand, Spanish-Venezuelan, Portuguese-Brazilian); (*d*) differences of age alone (the same, identical subjects at two ages (New Zealanders at 18 and 22)); (*e*) differences of educational level (two German groups). The groups are defined in Table 1.

In the course of basic research directed to constantly improved definition of the primary simple structure personality factors in the Q-medium, the Institute for Personality and Ability Testing has issued three successive editions of the 16 P.F.: one in 1949, one in 1961-1962, and one in 1967-1968, all in A and B equivalent forms and the latest also in C and D forms. The degrees of agreement can thus be examined not only across population samples, but also across the different IPAT instruments for measuring the same personality factors. A summary of these and their foreign translations involved here is given in Table 2. The difference of edition might be expected to affect the second order outcome among scale correlations, but not the pure factor correlations—(*a*) not (*b*) in section A above.

It might also be said that differences of a third kind existed in that, although all administration was the same in the ordinary sense of test administration, it was not the same with respect to the role of the subject, since some were taken in classrooms, some as paid subjects (the New Zealanders), and some under conditions where further employment might be affected by the result [see discussion on the role allowance formula (18, p. 27)]. Since this is not an unusual range of roles in testing, our interest is to ask what structure remains constant despite such common variability. The test is untimed, but, typically, takes 40 minutes for each form.

The scoring followed the standard key, the positions of items (187 in Form A; 187 in Form B) being the same in the various translations (the three here and seven others) and the original.

C. THE ANALYSIS

Pearson product moment correlations were calculated among the scale raw scores in all instances—the majority—in which method (a) was used (correlations *among scales* for primary factors). In one case (referred to as 6.NZP) analysis was carried out from the correlations among factors [method (b)] by factoring the 32 variables constituted by the 16 A and the 16 B forms. The cosines among reference vectors at the simple structure position were converted to correlations among factors in this case, while in all others the 16×16 matrix of intercorrelations among scales was used [method (a)].

First, the principal components solution for each of the 16×16 correlation matrices was computed temporarily, with the use of unities in the diagonal. The roots of this method were then graphed in order to do a scree test (8) to help decide the number of factors to be extracted. The Kaiser-Guttman method of extracting only roots greater than one would err on the conservative side, as can be seen by the values in Figure 1. Indeed, this "roots greater than 1" criterion would err in suggesting only four or five factors in each of the cases presented here; but as Cattell has pointed out elsewhere (7), the method is even theoretically incorrect for rotated factors. In any case, other methods (i.e., maximum likelihood) have agreed with the eight to 10 factors indicated by the scree test; and the ultimate consistency of results is another support for the outcome by the scree. However, as Figure 1 shows, the scree does not invariably give a clear solution at the second order; and it remains a test in which really good agreement is found only among experienced users—i.e., there remains some art in perceiving which is the final scree line. Nevertheless, whenever plasmodes of known factor number have been used to test the method, the agreement of such trained users with the number of factors inserted is very good indeed (14).

It can be seen from Figure 1 that the number of factors extracted was generally nine. In one case there were eight, and in one case 10; and one can note special conditions on these.

In all cases communalities were calculated, and a V_0 obtained by an iterative principal axes procedure carried out to be consistent with the number of factors (usually nine) extracted. Then the V_0 's were rotated with the Procrustes method to approximate a known second order solution, in order to cut down the number of hand rotations needed to reach the ultimate maximum simple structure.

Typically, some 15 overall blind rotations, using the Rotoplot program (12), were necessary before an unimprovable percentage of variables included in the 10% hyperplane was reached. (This was watched by plotting a "history

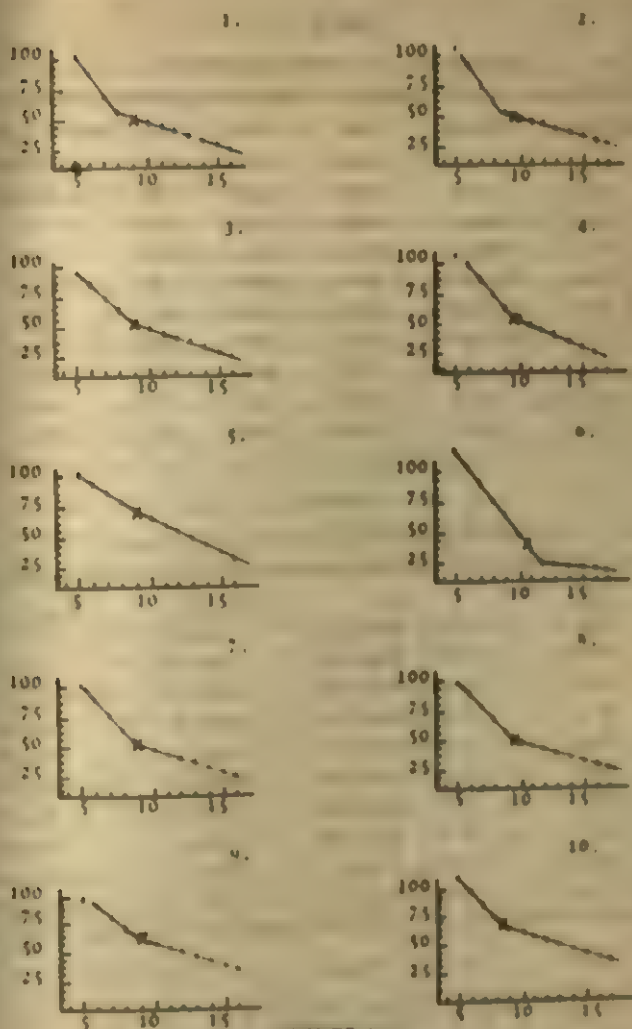


FIGURE 1

DECREASING TEST GRAPHS FOR THE 10 STUDIES

of hyperplane" diagram and stopping at the plateau. The percentages reached for the V_{∞} solutions are shown in Table 3.)

The average value, standing in the mid-seventies, is consistent with the highest reached in previous studies. The original rotated factor pattern matrices for each of the 10 studies are available from the authors.

Table 1

Particulars of the Population Samples

<u>Reference</u>	<u>Country</u>	<u>Age</u>	<u>Sex</u>	<u>N</u>	<u>Education Level</u>	
1	Boys	USA	mixed	boys	1000	stratified
2	Girls	USA	mixed	girls	880	stratified
3	Gr H	Germany	student	mixed	1800	high
4	Gr L	Germany	student	mixed	1100	low
5	Venez	Venezuela	mixed	mixed	300	stratified
6	NZP	New Zealand	17-19	mixed	1097	high
7	NZ1	New Zealand	21-23	mixed	397	high
8	NZ2	New Zealand	17-19	mixed	1097	high
9	Bras M	Brazil	student	boys	770	high
10	Bras T	Brazil	student	mixed	2234	high

Table 2

Primary Personality Factor Measuring Instruments

	<u>Study</u>	<u>Test</u>	<u>Revision</u>	<u>Translation</u>
1	Boys	16 P.F. Forms A+B	1967-68	English
2	Girls	16 P.F. Forms A+B	1967-68	English
3	Gr H	16 P.F. Forms A+B	1961-62	German
4	Gr L	16 P.F. Forms A+B	1961-62	German
5	Venez	16 P.F. Form A	1961	Spanish
6	NZP	16 P.F. Forms A+B	1961-62	English
7	NZ1	16 P.F. Forms A+B	1961-62	English
8	NZ2	16 P.F. Forms A+B	1961-62	English
9	Braz M	16 P.F. Form A	1956	Portuguese
10	Braz T	16 P.F. Form A	1956	Portuguese

Table 3

Percentage of Variables Included in the $\pm 10\%$
Hyperplane Width

	<u>Study</u>									
	1	2	3	4	5	6	7	8	9	10
Percent	72	76	78	78	73	70	74	72	71	68

Now we present the next stage in which each factor is represented separately in a table, setting out its loadings in each of the 10 studies—i.e., after matching. For clarity and economy, loadings below .2 have been omitted (unless for relevant reasons inserted in brackets); but all loadings are, of course, available in the microfilms. Factors I through IX, in the usual order of Roman numerals assigned to the second order factors in this realm (18), are presented in Tables 4 through 12.

Factor I (Table 4) shows a pattern loaded on four variables, A+, F+, H+, and Q₂—, in all of the studies where the 1961 or later editions of the test were used; and the correlations were from the scale scores. This factor, Invia *vs.* Exvia—the core of the popular concept Introversion *vs.* Extraversion—has negative loadings on M when the early 1949 edition was the instrument and also when the first order factor intercorrelations were used. This M has also appeared in earlier studies (30); and claims can, therefore, obviously be made for autism (M+) having some role in invia. (In one case there is also a low but significant negative loading on Q₁.)

Factor II shows a remarkable similarity between studies. There is only one discrepancy, and this is a small negative loading on Q₁ for the Brazil Males study. Otherwise, these loadings are the same as those presented in the *16 P.F. Handbook* (18).

Factor III, like Factor I, only shows discrepancies when method (b) was used for correlations and when the early 1949 edition was used. The *Handbook* (18) suggests that women should show loadings on E and L, additional to A—, I—, and M—; but this is not substantiated.

Factor IV shows more variability than has hitherto been encountered, with respect to difference of sex and differences of culture. The most consistent loadings are positives on E, F, H, L, and M. Males have a loading on F but none on M, whereas females differ by having a positive loading on Q₂. The Venezuela sample degenerates on this factor to just an L loading. The New Zealand Occasion 1 sample differs by having a bit of N and the Occasion 2 by having some G— and some Q₂.

This factor also differs in two primaries (Q₁ and F) from the pattern from other sources given in the *Handbook*, which has E, L, M, Q₁, and Q₂.

Factor V is mainly N with some A. Here the sex difference is noticeable on A, as suggested in the *Handbook* (the M— and O— did not appear though). The New Zealand and Brazil samples indicate a higher A loading for those cultures. The method (b) type of analysis and the Brazil Total also show some discrepancies.

Table 4
Factor I Invia vs Exvia

	Boys	Girls	Gr H	Gr L	Venez	NZP	NZ1	NZ2	Braz M	Braz T
A	614	658	529	608	625	455	505	708	758	366
F	629	659	537	560	554	552	648	566	266	288
H	547	567	567	540	467	565	636	600	348	401
M						-446			-670	-351
Q ₁	*					-268				
Q ₂	-780	-817	-692	-617	-625	-882	-699	-750	-384	-548

Table 5
Factor II Adjustment vs Anxiety **

	Boys	Girls	Gr H	Gr L	Venez	NZP	NZ1	NZ2	Braz M	Braz T
C	-804	-742	-780	-728	-597	-685	-791	-754	-378	-342
H	-406	-381	-373	-419	-481	-673	-391	-363	-333	-248
L	513	488	550	591	512	784	656	616	517	432
O	869	852	814	832	679	684	770	869	677	693
Q ₁									-278	
Q ₃	-467	-440	-375	-423	-373	-403	-439	-516	-356	-415
Q ₄	842	807	761	764	678	822	834	882	799	783

Table 6
Factor III Pathemia vs Cortertia

	Boys	Girls	Gr H	Gr L	Venez	NZP	NZ1	NZ2	Braz M	Braz T
A	-327	-211	-293	-323	-354	-539	-305	-289		-228
C									283	314
H									-261	
I	-745	-661	-877	-826	-707	-589	-849	-902	-536	-592
M	-459	-407	-450	-327	-496	-673	-716	-792	-370	-364
O						-450				

* all values less than † .200 have been deleted.

** Only traits with values greater than 0.20 are included in these tables.

Factor VI is the most poorly reproduced factor, as will be discussed below in the congruences part. Here the most stable variable loaded is Q_1 , which is not in agreement with the *Handbook*. All of the studies that were done on the 1961-1962 or the later edition (1967-1968) and used method (a) for correlations also show a consistent loading on M. There is a bit of sex difference here with girls loading I—.

Factor VII is clearly a general intelligence factor, for there is no other consistent loading; and, indeed, on five of the studies, no other loadings at all over $\pm .20$. The most "impure" study here is the one using method (b). In previous findings and discussion on this factor, the hypothesis has been accepted that Factor B, intelligence, is really a second stratum factor inserted among the primary stratum factors of the 16 P.F. (for practical convenience of users). According to theory (7), a variable for a second stratum factor included among lower order scales should still pull apart on its own, just as B has done here at the second order analysis. Incidentally, this is also in accord with the generalization that objective test (T-data) factors correspond to second orders from Q-data, in that U.I. 1 is now added to U.I. 19, 22, 24, and 32 as hypothesized matches to the second orders here.

Factor VIII is consistent with the *Handbook* and shows fairly high regularity. It loads most consistently on F—, G, and Q_3 . There are no consistent form differences. The main difference is lack of Q_3 when method (b) was used and the addition of C and E— (the E— was found in three others as well). There appear to be cultural differences on this factor. The Venezuela sample was highest on E— and also included H—, while the New Zealanders also had small amounts of E—. Unlike intelligence, B, in VII, the primary superego, G, does not wholly account for this factor. It is considered a moral home upbringing which develops both G and Q_3 (self-sentiment), while the inhibition in desurgency (F—) also fits this psychological interpretation.

Factor IX is a factor that is not reproduced across cultures or tests (though it does appear with the same loading on Boys and Girls on the 1967-1968 edition). Thus, no match or meaning is implied by assembling the loadings for this presumed "common error factor" in Table 12.

Table 13 presents Burt's congruence coefficient¹ calculated on the loading

¹ The coefficient of congruence is calculated by the formula:

$$r_{cij} = (\sum X_i Y_j) / \sum X_i^2 Y_j^2,$$

where the X_i 's are entries on Factor i of one study, and the Y_j 's are entries on Factor j of another study (1, 44). In matrix notation, the formula for calculating these indices is as follows (21):

$$E = D_{F_i}^{-1/2} F_1' F_2 D_{F_j}^{-1/2},$$

where D_{F_i} is the principal diagonal matrix of $F_i' F_i$.

Table 10
Factor VII Low vs High Intelligence

	Boys	Girls	Gr H	Gr L	Venez	NZP	NZ1	NZ2	Braz M	Braz T
B	717	594	888	884	697	669	562	515	626	458
C						323				
F						379				
L										-287
Q ₁						211				
Q ₃							-209			
Q ₄						216			493	

Table 11

Factor VIII Weak vs Strong Moral Upbringing

	Boys	Girls	Gr H	Gr L	Venez	NZP	NZ1	NZ2	Braz M	Braz T
C						-290				
E			-198		-667	-258	-289			
F	-212	-296	-255	-298	-316	-536	-330	-318	(-177)	-251
G	769	884	862	825	391	814	753	749	498	570
H					-364					
Q ₃	588	819	380	265	448		411	732	461	383

Table 12

Factor IX Common Error Factor

	Boys	Girls	Gr H	Gr L	Venue	NZP	NZ1	NZ2	Brax M	Brax T
C						-411				
F							-324	-342		
I				375						
M	359	329								
O						408				
Q ₂					451					
Q ₃			409	230		628		-254		
Q ₄								470		

patterns across two of the experiments. *All* possible comparisons are set out here—i.e., including the congruences in the off-diagonals—so that the whole picture may be judged; but they are so much lower than those in the diagonal so as not to be of real interest. (Figures in the diagonal are, of course, between like factors in the two studies, while the off-diagonal entries are the congruences between one factor in the one study and every other factor in the other study—e.g., Factor 1 Study 1 with Factor 2 Study 3 as emphasized in Table 13).

Table 13

Sample of Complete Congruence Coefficient Matrix

		3. German H.								
		I	II	III	IV	V	VI	VII	VIII	IX
1. Boys	I	<u>92</u>	<u>-18</u>	-19	37	15	-07	-02	-09	-35
	II	-09	<u>97</u>	-06	-04	-04	-08	04	-14	-24
	III	-09	-01	<u>96</u>	-09	-08	-14	00	00	10
	IV	28	10	-00	<u>94</u>	-00	25	-02	-21	-04
	V	12	-04	-10	-27	<u>90</u>	-01	-05	10	10
	VI	-06	09	-23	07	-03	<u>94</u>	-05	01	07
	VII	-06	-12	-06	03	-09	10	<u>91</u>	-05	-10
	VIII	-11	-14	11	-11	06	-06	00	<u>93</u>	56
	IX	-18	-04	09	06	-02	17	-03	08	<u>01</u>

Table 14 presents all the diagonals of the congruences matrices comparing every study with every other one. The means of each column are shown at the bottom of the Table. A glance at the Table will show that the degree of calculated similarity between factors judged to be matched is normally very high [see significances in the tables in Schneewind and Cattell (39)].

The means of the columns indicate that Factor II (anxiety) is the most invariant, followed consecutively by Factors I, III, and VIII. Factor IX is not considered a substantive trait pattern for reasons that are obvious. Factor VI is the least invariant and is also one that was occasionally better matched

Table 14

Congruences for Similar Factors Comparing Each
Study With Each Other

Studies Compared	Factors								
	I	II	III	IV	V	VI	VII	VIII	IX
1-2	100	100	96	98	96	94	97	98	86
1-3	99	97	96	94	90	94	91	93	01
1-4	99	98	95	91	89	95	92	91	-54
1-5	97	97	97	87	86	82	93	60	-29
1-6	92	97	85	85	81	53	77	72	-04
1-7	98	97	97	91	85	92	78	92	50
1-8	99	99	95	89	84	64	80	95	-07
1-9	78	94	82	84	81	55	77	94	-08
1-10	89	95	87	90	66	46	72	96	
2-3	99	98	97	95	93	94	85	92	-27
2-4	98	99	96	92	92	93	89	89	-48
2-5	97	97	95	62	90	76	90	65	-31
2-6	92	97	83	86	90	59	77	76	01
2-7	97	98	96	91	90	91	77	92	32
2-8	99	99	93	88	90	63	74	96	-11
2-9	77	94	86	85	88	54	77	93	-16
2-10	87	96	90	91	72	40	63	95	
3-4	99	100	99	97	99	99	99	97	53
3-5	96	97	94	59	97	85	97	71	-05
3-6	93	96	84	90	82	62	72	85	67
3-7	98	99	95	91	82	91	79	96	12
3-8	99	99	96	84	85	78	83	96	-32
3-9	77	94	82	92	90	48	79	88	18
3-10	87	96	86	95	75	43	73	95	-10
4-5	96	98	94	52	97	86	98	59	02
4-6	93	97	79	90	83	60	78	85	32
4-7	98	99	93	90	77	91	78	93	-19
4-8	99	99	93	78	80	75	85	91	-21
4-9	82	96	80	89	88	48	77	83	07
4-10	89	97	86	92	71	49	71	90	
5-6	91	97	79	57	85	41	76	60	-41
5-7	94	98	94	68	79	68	75	74	-08
5-8	97	98	92	73	84	62	80	75	33
5-9	81	95	82	54	90	56	78	64	-24
5-10	88	95	89	46	76	56	66	66	
6-7	91	97	88	92	87	56	65	83	01
6-8	91	97	89	83	84	65	61	77	-29
6-9	82	94	68	91	89	56	43	70	34
6-10	91	94	70	88	75	24	58	82	
7-8	97	99	97	89	92	72	61	96	-44
7-9	71	96	83	85	84	46	69	89	-12
7-10	87	96	84	86	70	33	67	93	
8-9	78	96	84	81	89	23	51	95	-11
8-10	86	97	86	82	75	15	69	95	
9-10	88	98	93	96	86	60	58	95	-21
Mean	.915	.970	.890	.833	.847	.643	.763	.850	

with another factor (a minus sign on a factor indicates a match with a reflected factor). Table 15 presents the exceptional studies and matches where Factors IV and VI were actually better matched with another factor than that which the consensus of congruences indicates.

Table 15

Congruences of Mismatched Factors

Studies	Factors	Highest Congruence Coefficient
2-5	4-8	-69
3-5	4-8	-72
4-5	4-8	-80
5-6	4-8	-69
5-9	4-8	-69
5-10	4-8	-72
2-10	6-3	-44
3-9	6-1	-56
3-10	6-3	-49
4-9	6-1	-52
4-10	6-3	-51
6-9	6-1	-65
7-9	6-1	-61
7-10	6-3	44
8-9	6-9	-53
8-10	6-7	49

D. SUMMARY AND EVALUATION

1. Factor analyses to maximum simple structure (oblique) on each of 10 samples differing in test edition, age, and cultural population have yielded essentially the same eight second order factors from the primary factors in the 16 P.F.

2. Goodness of match, by the congruence coefficient, seems to vary little according to culture and language translation; but the agreement is better among studies derived from the same method—correlation of actual 16 P.F. scales—than with the correlation of pure factors as reached in the primary simple structure rotations.

3. The best mutual agreement, and agreement with past researches summarized elsewhere (18), is established for extraversion (the core of extraversion F_I ; anxiety F_{II} ; corticity F_{III} ; intelligence F_{VII} ; and the factor sometimes called superego strength, but actually best interpreted as a firm moral home upbringing, which affects simultaneously the superego factor, G, the development of the self-sentiment, Q_3 , and some production of general inhibition in desurgency, $F(-)$).

4. The independence factor, F_{IV} , is somewhat less invariant than in previous researches, while F_V and, especially, F_{VI} —which have never been definitively stabilized or interpreted in previous researches—still present a challenge to interpretation. However, space precludes discussion of new hypotheses here.

5. Apart from the main congruences, in the region of .8, there are in some researches lesser but appreciable correlations of factor patterns among specific disparate factors. These off-diagonal values do not upset the hierarchy (permitting the outstanding values to run down the diagonal) and are best interpreted as instances of cooperative factors. That is to say, some degree of similarity of factor pattern is not inconsistent with completely uncorrelated factor scores.

A third order analysis on the basis of these second orders is in progress.

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Department of Psychology
University of Illinois
Champaign, Illinois 61820

Department of Development and Research
Calgary Public School Board
Calgary 21, Alberta, Canada



CHILD-REARING ATTITUDES OF CHINESE, JEWISH, AND PROTESTANT MOTHERS*

The Ohio State University

SARA FINN KRIGER AND WILLIAM H. KROES

A. INTRODUCTION

The behaviors involved in child rearing bring to mind a very intimate and personal procedure, one that is limited to the basic family unit. In reality, however, the procedure is a gradual, continuous, sociocultural one which extends beyond the nuclear family. It is the sociocultural aspect of the child-rearing process that determines, for the most part, what social stimuli require what responses, and what practices or attitudes concerning child rearing are deemed effective, appropriate, and acceptable by each particular society. Thus there exists a great potential for diversity in child-rearing attitudes of mothers who belong to different subcultures in the U.S. It is recognized that these subcultures differ in ethnic origins and customs and, therefore, should differ with regard to their attitudes toward child rearing.

The specific questionnaire selected for this purpose was the Parental Attitude Research Instrument, PARI (13). In the past 10 years since its development, the PARI has become the most popular instrument in use in the area of parental attitude assessment. The two major factors of the PARI have been labelled "Control"—i.e., approved maternal control of the child—and "Rejection"—i.e., approval of maternal expression of hostility. Information about the development of the PARI—its scales, quantifications of interview data, reliabilities, and other pertinent details—is available in many published sources (e.g., 3, 12).

Members of the middle-class Jewish community and members of the middle-class Chinese community, considered to hold quite distinct child-rearing values, were selected for the investigation. For a comparison with the dominant culture, a control sample of middle-class white Protestant mothers representing "American" attitudes toward child rearing was included in the study.

In spite of a differing cultural origin, the value orientation of American Jewish families is comparable to the middle-class values of American life (8,

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16). Attitudes toward child rearing of the modal American mother have become more liberal, particularly during the last three decades (4, 11). Consequently the Jewish mother will hold the same kind of liberal permissive attitudes toward child rearing and, thus, both groups should show a high degree of permissiveness as measured by the Control scale of the PARI.

With regard to Rejection, the second factor of the PARI, it should be observed that "an attitude of rejection is much disapproved of in American culture and few mothers can acknowledge it, even to themselves" (14, p. 170). Thus, consistent with the assumptions that the Jewish mother will reflect the modal attitudes prevalent in the American culture, she will not approve maternal expression of hostility or dissatisfaction with the child as a member of the family, or withdrawal of love as a disciplinary technique.

Concerning the Chinese culture, it is so distinct, involving unique language, religion, and mores, and its characteristics are so deeply engraved in its members' personality and way of life (1) that the second-generation Chinese-Americans would be very likely to retain much of their cultural heritage as a means of maintaining feelings of security or belongingness, even though overtly they will adopt some of the practices of the host culture (9). Thus, although one may expect to find similarities between Americans and Chinese-Americans in many aspects of life, at least in the area of child rearing the attitudes of Chinese-American parents are expected to be almost opposite those of American parents. This stems from the Chinese belief that the father is the authority figure in the household, and that since children's behavior reflects on their parents, it is the responsibility of the parents and the nearest kin to control their children (7).

Further, the Chinese subculture in the U.S. is looked upon as holding a "restrictive" pattern of child-rearing attitudes. And relative to the permissive "American" attitudes the Chinese can be seen as occupying the strict end of the continuum permissiveness-strictness. With regard to Rejection, the Chinese mother, because of the fact that she places higher values on strictness and control of behavior, is likely to approve the expression of hostility or rejection towards the child. The Chinese mother is likely to use verbal or gestural rejection, since these are considered effective for the purpose of disciplining the child and training him to bring honor to his family and to himself (15).

It is the purpose of this study to investigate the difference among the child-rearing attitudes of Jewish, Chinese, and Protestant mothers. It is postulated that the Chinese mothers' attitudes will be significantly different from Protestant mothers' attitudes, but the Jewish mothers' attitudes will be the same as the Protestant mothers' attitudes.

B. METHOD

1. Subjects

One hundred and five mothers, 35 each from Protestant, Jewish, and Chinese backgrounds were selected as subjects. To insure homogeneity of grouping, the following were criteria for selection as a subject:

(a) *Identification with the particular culture.* The American group was selected from various Protestant women's groups, which were basically social, but affiliated with Protestant denomination churches. The Jewish mothers were selected through a Jewish social and cultural youth organization, and the Chinese mothers were selected through several Chinese women's associations. To insure equal exposure to the "host" culture, only second generation Chinese and Jewish mothers were included.

(b) *Level of education.* Minimum education level was set at graduation from high school with a maximum of holding a B.A. degree.

(c) *Socioeconomic standing.* The subjects were required to be from the same socioeconomic class, in this case the middle class. Participants in the study were selected according to two criteria. Chinese, Jewish, and Protestant mothers whose husbands' occupations and area of residence defined them as middle class were identified. Final selection was on the basis of self-report information given on a biographical information schedule.

(d) *Age of mother.* An age range of 35-45 was selected. By this age most mothers have had some experience with their children, and are likely to reflect current attitudes toward child rearing, which should parallel their practices.

(e) *Number of children and their ages.* Mothers were required to have a minimum of two children, with at least one being over 10 years of age.

2. Instrument and Procedure

The instrument used to measure maternal attitudes about child rearing and life in general was the PARI. The format of the PARI involves the use of generalized third person statements concerning child rearing—e.g., "Children should be allowed to disagree with their parents if they feel their own ideas are better"—allowing for four alternative responses which range from "Strongly Agree" to "Strongly Disagree." Mothers were first contacted on the phone and asked to participate in the study. Upon their agreement, the PARI was then mailed to them along with a biographical information sheet.

C. RESULTS

Mean scores on the Control scale of the PARI for the Protestant, Jewish, and Chinese groups were 150, 152, and 212, respectively. This difference is

highly significant, as shown by a one-way analysis of variance ($F = 40.45$, $df = 2/102$, $p < .0001$).

A Duncan range test for trend (6) showed ($p < .05$) that the Chinese group was significantly different from the Protestant and Jewish group; the Jewish and Protestant group did not differ significantly from each other. Thus the prediction that Chinese mothers are more restrictive in their child-rearing attitudes than Jewish or Protestant mothers is confirmed.

On the Rejection scale, all groups scored within one point of each other; mean score for the Protestant, Jewish, and Chinese groups was, in order, 56, 55, 56. It should be noted that the maximum score possible on Rejection is 80; whereas for Control, a maximum score of 320 is possible. A one-way analysis of variance confirmed ($F < 1$) that there was no significant difference among the three groups; thus, contrary to expectation, Chinese mothers do not appear to be more hostile and rejecting in their attitudes on child rearing than either Protestant or Jewish mothers.

D. DISCUSSION

The implication of the results obtained in this study—i.e., that, compared to Jewish and Protestant mothers, Chinese mothers scored high on Control—is that Chinese mothers are more restrictive in their child-rearing attitudes than Jewish or Protestant mothers whose attitudes are comparable and are significantly more permissive. The permissiveness-restrictiveness continuum has been found to relate to several personality and behavioral variables in children. The level of motivation for achievement of the child has been linked to the behavior of parents along this continuum (17). Permissiveness is seen as allowing for the development of independence and high need achievement in the child; authoritarian, restrictive behaviors are seen as curbing this development, resulting in a lower need for achievement (2). Restrictive behaviors and attitudes on the part of the mother have also been linked with under achievement in school (5).

These findings would lead to the prediction that Chinese children would be less independent and less achievement oriented than Protestant or Jewish children. Regrettably, no comparative data are available about the level of achievement motivation of the Chinese. McClelland (10), in comparing the need achievement level of members of different cultures, presents data on the need achievement of Orientals, but his sample consisted of Japanese, rather than Chinese subjects. Even though both cultures are referred to as "Oriental," they are quite distinct so that the information presented by McClelland on the Japanese cannot be generalized to members of the Chinese culture. In addition,

McClelland's subjects were examined within the context of their own culture, rather than as members of a subculture within a host culture, as was the case in the present study.

As noted, there were no statistically significant differences among Protestant, Jewish, or Chinese on the dimension of Rejection. One explanation of the failure to find differences is that individual mothers would not avow strong approval of rejection due to the general sociocultural undesirability of displaying a rejection attitude towards one's children.

The results suggest that the Chinese mother is likely to retain her cultural values, at least with regard to child rearing, even though these differ from the predominant values of the host culture and, as a result, she is likely to be more restrictive (due to cultural bias) with her children than the average Protestant or Jewish mother.

E. SUMMARY

Three groups of mothers, differing in subcultural background (Jewish, Chinese, and Protestant), were administered the Parental Attitude Research Instrument (PARI). Chinese mothers scored significantly higher than both Jewish and Protestant mothers on the PARI Control scale; there were no significant differences between Jewish and Protestant mothers' scores on Control. Contrary to predictions, no significant differences were found among the three groups on the PARI Rejection scale. The results are interpreted in light of cultural differences in assimilation, family structure, and child-rearing attitudes.

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30 E. Pacemont

Columbus, Ohio 43202

ATTITUDINAL POINTS OF AGREEMENT AND DISAGREEMENT*¹

Educational Foundation for Human Sexuality, Montclair State College

GEORGE S. ROTTER

A. INTRODUCTION

In the assessment of social attitudes, one of the more widely used procedures is to have respondent indicate the amount of agreement or disagreement with each attitudinal statement [see, for example, *Personal Competence Scale* (1), *Intrinsic-Extrinsic Religious Orientation* (3), *Anomie Scale* (5), *Intolerance of Ambiguity Scale* (6), *RAPH Scale* (8), *Alienation* (9), *Dimensions of Religious Ideology Scale* (10), *Alienation via Rejection Scale* (15), *Ten-Item F-Scale* (17)]. For the purpose of statistical analysis, the different points of agreement are assigned whole number counterparts, usually with equal intervals (see for example, 7, p. 422). As an example, *Agree a lot* might be scored "4," *Agree a little* might be scored "3," *Disagree a little* "2," and *Disagree a lot* "1."

In surveying these scales, however, certain problems and variations in practice have been noted. In the above citations, for example, no two scales utilize the same schedule of agreement. In the *Alienation Scale* (9) only two points of agreement (Agree or Disagree) are used; the *Anomie Scale* (5) uses three points of agreement (Agree, ?, Disagree); the *Personal Competence Scale* (1) uses four points (Agree a lot, Agree a little, Disagree a little, and Disagree a lot); the *Intolerance of Ambiguity Scale* (6) uses five points (Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree); the *RAPH Scale* (8) uses six points (Strongly Agree, Agree, Slightly Agree, Slightly Disagree, Disagree, Strongly Disagree), and the *Dimensions of Religious Ideology Scale* (10) uses seven points (Strong Agreement, Moderate Agreement, Slight Agreement, Don't know or no answer, Slight Disagreement, Moderate Disagreement, and Strong Disagreement).

Symonds (18) has argued that seven divisions are optimal. In his review, Guilford (4, p. 291) concludes there are no hard and fast rules to apply con-

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cerning the number of points one should utilize in a rating scale. He notes, however, that where too few steps are used, the scale becomes coarse and much of the discrimination powers of the rater are lost (4, p. 290). Conversely, fewer divisions can be responded to more quickly than many divisions, and too many steps may be beyond the rater's limited power of observation (4, p. 290).

The labels representing extreme agreement (or disagreement) also vary. *The Intolerance of Ambiguity Scale* (6) has "strongly agree"; the *Ten Item F-Scale* (17) uses "Agree quite a bit"; *Personal Competence Scale* (1) has "Agree a lot," and the *Intrinsic-Extrinsic Scale* (3) utilizes "Definitely Agree." McDavid and Harari (7, p. 422) state that respondents usually can express degrees of agreement ranging from "complete and unqualified agreement" to "complete and unqualified disagreement." The use of such extreme end-categories (e.g., 16), however, appears to be very rare as indicated by a perusal of two compendia of attitude scales (11, 13).

Quite clearly, the most popular endpoint is some variation of "Strongly Agree" (e.g., 6, 8, 10, 15). The widespread use of this as an end-category, however, appears to be ill-advised. For example, in some unpublished data upon which the Rotter and Barton (12) study was based, a great many of the 150 attitudinal statements to which subjects responded showed a heavy piling in the extreme categories of "strongly agree" and "strongly disagree." Obviously, a category representing more extreme agreement than "strongly" could have been utilized.

Implied in these scales is the assumption that the counterpart descriptive points are equal for agreement and disagreement. Hence, "moderate agreement" would represent that degree of disagreement.

In general, there is little in the literature that tells us which endpoints of agreement are best, which descriptions are balanced for agreement and disagreement, and which labels constitute approximate equal intervals. In light of the above, the purpose of this study was to (a) determine the extent of agreement connoted by the various descriptions, (b) determine which descriptions represent equivalent counterpoints of agreement and disagreement, (c) select endpoints of the scale that approach totality or the entire range of agreement and disagreement, and (d) select rationally seven descriptive points that could be utilized on a scale of agreement-disagreement.

B. METHOD

1. Paired Comparisons

To fulfill the goals stated above, the Method of Paired Comparisons was used. In this technique every stimulus or item is presented in a pair with every

other item, and a judge must indicate which of each pair represents the greater degree of the attribute under consideration. From this, a matrix is generated giving the number or percentage of times each item is judged to be higher or greater for that attribute than each other item.

From this matrix, each item is given a derived value which approximates the properties of an interval-scale (4, p. 155). To this end, a normal distribution is assumed. Given this, each percentage is converted into its *Z*-score equivalent. From this *Z*-score matrix, a mean of *Z*s is computed for each item. Consequently, each item is given a derived value along a dimension that approximates the properties of an interval scale (4, p. 155). Guilford goes so far as to suggest that the results might very well serve as the criterion of validity against which to check any of the less accurate or less dependable methods of evaluating (4, p. 174).

2. Subjects

Used as judges were 160 students enrolled in various graduate and undergraduate psychology courses at Montclair State College. Both males and females were included, and all may be classified as volunteers. Sherif and Sherif (14, p. 368) note that systematic displacements according to the judge's attitudes can be reduced by the Method of Paired Comparisons. They do point out, however, that Coombs (2) did find evidence that even by the Method of Paired Comparisons, scale values can differ according to attitudes. Nevertheless, it is assumed that the findings would not be critically affected by the nature of sample used.

3. Materials

As seen in Table 1, extents of agreement and disagreement were represented in 16 ways, and the expressions run parallel. For example, where there exists "Agree Unconditionally," there also appears "Disagree Unconditionally." From these, two separate questionnaires were constructed: one representing Agreement, the other representing Disagreement.

With the use of the Agree expressions only, every term of agreement was paired with each of the other 15 terms of agreement. Hence, each label appears in 15 pairs. In toto, this procedure generates 120 pairs of items. Within each pair, the expression that appears first was determined randomly. Similarly, the questionnaire number of each item-pair was randomly given. Fifteen pairs appeared on each page.

Following the construction of the "Agree" questionnaire, the "Disagree" form was developed. Its format parallels precisely the Agree questionnaire. For

example, Pair 6 appeared as follows on the Agree form: (a) Mostly agree, (b) Agree unconditionally. On the Disagree form, Pair 6 appears as follows: (a) Mostly disagree, (b) Disagree unconditionally.

4. Procedure

The Agree and Disagree questionnaires were placed in random order and then distributed to graduate and undergraduate male and female students during regular class sessions. For students given the Agree form, they were asked to indicate which expression from each pair represents stronger and more extreme agreement. For students receiving the Disagree form, they were asked to indicate which expression from each pair represents stronger and more extreme disagreement. They responded by circling an (a) or (b) on a separate answer sheet, whichever corresponded to their selection.

They were urged to guess even when they could not make a reasoned decision. They were told that their answers would be anonymous and that they were not required to fill out this scale. No one subject filled out both Agree and Disagree scales.

C. RESULTS

Eighty subjects answered the Agree Scale, and 80 other subjects answered the Disagree Scale. Hence, for each comparison or pair there were 80 responses as to which represented stronger agreement (or disagreement for the other condition). Since each term was compared to each of the other 15 terms, 15 percentages for each expression were computed, each indicating the proportion of times that item was preferred over the paired item. These percentages were then converted to Z-score equivalents. A mean based upon these 15 Z-scores was computed for each expression, and all appear in Table 1. These values are assumed to represent interval scale values.

For the Agreement expressions, the more positive the value, the stronger the extent of agreement connoted by the statement; the more negative the value, the weaker the extent of agreement connoted. Similarly, for the Disagreement expressions, the more positive the value, the stronger the extent of disagreement represented by that statement; the more negative the value, the weaker the extent of disagreement represented.

As seen in Table 1, of the 16 expressions of agreement, *Absolutely Agree* represents the greatest agreement. Of those expressions of disagreement, *Totally Disagree* connotes the greatest disagreement. As the scale values indicate, however, they differ by trivial amounts from, respectively, *Totally Agree* and *Absolutely Disagree*.

TABLE 1
 ASSESSMENT OF TERMS OF AGREEMENT AND DISAGREEMENT

Agreement	\bar{X}_1	r	\bar{X}_2	Disagreement
Absolutely Agree	1.159	.946**	.948	Absolutely Disagree
Totally Agree	1.129	.762**	.957	Totally Disagree
Agree Unconditionally	.728	.928**	.699	Disagree Unconditionally
Extremely Agree	.635	.949**	.547	Extremely Disagree
Intensely Agree	.529	.926**	.576	Intensely Disagree
Agree Strongly	.475	.870**	.241	Disagree Strongly
Agree Utterly	.385	.940**	.435	Disagree Utterly
Agree Greatly	.307	.977**	.080	Disagree Greatly
Agree Very Much	.036	.975**	-.125	Disagree Very Much
Agree a Great Deal	-.031	.968**	-.237	Disagree a Great Deal
Agree	-.209	.920**	-.214	Disagree
Mostly Agree	-.875	.818**	-.674	Mostly Disagree
Do not Disagree	-.944	.941**	.034	Do not Agree
Tend to Agree	-1.059	.755**	-1.019	Tend to Disagree
Agree Somewhat	-1.109	.811**	-1.061	Disagree Somewhat
Agree Slightly	-1.200	.348	-1.192	Disagree Slightly

** $p < .01$.

Agree Slightly connotes the mildest degree of agreement. This is in concord with *Disagree Slightly* which represents the mildest disagreement. In general, there occurs a strong relationship for the overall Z-score values for the 16 parallel expressions of agreement and disagreement ($r_{xy} = .9353$).

As noted earlier, each descriptive term was paired with 15 other terms so that, ultimately, 15 Z-score values were derived for each expression. The 15 Z scores for each Agreement expression were then correlated with the 15 Z scores of its counterpart Disagreement expression. When *Agree* and *Disagree Slightly* were excluded all correlations were very high, ranging from .977 for *Agree and Disagree Greatly* to .755 for *Tend to Agree and Disagree*. Oddly, not only was the correlation low for *Agree and Disagree Slightly*, it was also not significant, a rash departure from the other correlations.

The Z-score matrix was also subjected to an analysis of variance with the Agree-Disagree questionnaires treated as Between-Subject effects and the 16 expressions treated as a Within-Subject repeated-measurements effect. Essentially, we wished to determine if there were any Z-scale value differences between the Agree and Disagree versions of any counterpart expressions.

The overall Questionnaires by Term interaction was quite insignificant ($F = 1.050$; $df = 15, 448$; ns) suggesting that, for the most part, adjectives indicating degree could be used with equivalence as expressions for Agreement and Disagreement.

One major exception emerges. As seen in Table 1, *Do not Agree* connotes stronger Disagreement than *Do not Disagree* represents Agreement ($t =$

3.372; $df = 28$; $p < .01$). In other words, *Do not Disagree* is clearly milder than *Do not Agree*.

D. DISCUSSION

From these findings, three parallel expressions have been selected as recommended for use in scales where some measure of agreement and disagreement is needed. First, *Totally Agree* and *Totally Disagree* are taken to represent the counterpart endpoints. Not only are they judged to connote extreme agreement compared to other terms but their mean Z values are quite similar to each other.

Absolutely Agree and *Absolutely Disagree* could also have been chosen. *Totally Agree* and *Totally Disagree* were selected, however, because they were slightly more similar to each other in Z values than were *Absolutely Agree* and *Absolutely Disagree*.

It was indicated earlier that *Strongly Agree* and *Strongly Disagree* apparently are the most widely used endpoints to represent extreme agreement. Yet, as seen in Table 1, a variety of terms could be considered superior representations and, in fact, two expressions, *Absolutely* and *Totally*, are substantially more connotative of extremity.

In addition, the mean Z values for *Agree Strongly* and *Disagree Strongly* differed more from each other than the counterpart Z values for the majority of expressions. As seen in Table 1, only one pair, *Do not Disagree* and *Do not Agree*, are more disparate. In summary, then, the widespread use of *Strongly Agree* and *Strongly Disagree* in scales requiring agreement is not justified by the findings obtained in this study.

Tend to Agree and *Tend to Disagree* are chosen as indicators of mild or weak counterpoints of agreement and disagreement. *Agree Slightly* and *Disagree Slightly*, as well as *Agree Somewhat* and *Disagree Somewhat*, are also adequate representatives of mild agreement. However, we desired a point that was slightly stronger than the mildest connotation and *Tend to Agree* and *Tend to Disagree* seem most suitable.

Agree Very Much and *Disagree Very Much* are selected to represent moderate amounts of agreement and disagreement. For one thing, they both lie close to the midpoints, respectively, for *Absolutely* and *Tend to Agree* and *Absolutely* and *Tend to Disagree* (Table 1). Secondly, their Z values are more similar to each other than are the Z values for other counterpart expressions representing moderate extents. Incidentally, the Z values suggest that *Strongly Agree* and *Strongly Disagree* are more suitable as moderate points of agreement than extreme points, though even here, there are inadequacies in their usage.

As the absolute neutral point, *Neutral or Don't Know* seems appropriate. Aside from other considerations, such a selection fills out all the points for a seven-point scale of agreement and disagreement.

In summary, then, we have a scale with the following steps: $+3 =$ Totally Agree; $+2 =$ Agree Very Much; $+1 =$ Tend to Agree; $0 =$ Neutral or Don't Know; $-1 =$ Tend to Disagree; $-2 =$ Disagree Very Much; $-3 =$ Totally Disagree.

The endpoints do represent relatively extreme agreement, the parallel counterpoints represent equivalent distances on the dimension of agreement and disagreement, and the numerical values approximate an interval scale with equal distances.

In some respects, there are shortcomings to this compilation that should be pointed out. For one thing, other terms could have been assumed, including the following: *Agree quite a bit*, *Agree a lot*, *Definitely Agree*, *Complete and Unqualified Agreement*, *Moderate Agreement*, and *Agree a little*. Second, we have little basis for concluding that the interval between *Neutral or Don't Know* and *Tend to Agree* and *Disagree* even approximates the intervals representing the distances between other points of the scale. Finally, the sample size should have been greater to be more assured that the percentages approximated the properties of the normal distribution. Despite these shortcomings and the call for further study, however, the findings have provided some rational basis for the selection of points of agreement and disagreement.

E. SUMMARY

For use in Likert scales, an attempt was made to determine which descriptions of agreement (and disagreement) match the equal-interval assumption of their numerical counterparts. With the use of 16 descriptive terms connotative of extent of agreement and the Method of Paired Comparisons, 120 pairs of items were generated. This was done separately for Agreement and Disagreement, and for each questionnaire, 80 judges indicated which term in each pair represented the greater degree of agreement (or disagreement).

Percentages were converted to Z scores which were then averaged. From this procedure, seven terms are recommended for use in Likert scales: Totally Agree ($+3$), Agree Very Much ($+2$), Tend to Agree ($+1$), Neutral or Don't Know (0), Tend to Disagree (-1), Disagree Very Much (-2), and Totally Disagree (-3). These were selected because (a) the endpoints anchor both the range of agreement and disagreement, (b) the parallel counterpoints best represent equivalent distances from Neutral, and (c) the numerical values approximate an equal interval scale.

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Educational Foundation for Human Sexuality
Montclair State College
Upper Montclair, New Jersey 07043

AUTHORITARIANISM, CREATIVITY, SUCCESS, AND FAILURE AMONG ADOLESCENTS* ¹

Temple University

RACHEL T. HARE

A. INTRODUCTION

In looking at the impact of certain experiences on individuals, we are increasingly interested today in what factors influence social attitudes and the conformity to or divergence from conventional norms. The purpose of the experiment was to study the effect of certain environmental influences, such as success and failure, on the moral judgment of adolescents who differed in creativity, as well as authoritarianism.

Creativity and low authoritarianism can be conceptualized as two complementary aspects of a preference for complexity as opposed to a preference for order and simplicity. The personality correlates which Barron (3) and Eisenman (8) have found associated with expressed preferences for simple or complex line drawings and polygons are similar to those associated with the authoritarian or autonomous personality, respectively, in the work of Adorno, Frenkel-Brunswik, Levinson, and Sanford (1) and Peabody (16). In the psychoanalytic framework, Ernst Kris's (15) concept of regression in the service of the ego and the research on it by Fitzgerald (11) and Wild (19) have dealt with the capacity for novelty, diversity, and change. The openness to inner experience has its counterpart in the response to the outer environment where the creative and low authoritarian person shows greater tolerance for unusual ideas and formulations, and an ability to cope with contradiction. Thus, a preference for visually complex shapes and for complex experiences appears likely to be related to the ability to tolerate information which might be personally threatening, since openness to self and environment frequently has been associated with tendencies toward critical self-appraisal (3, 13).

A high degree of creativity is synonymous with a highly integrated conceptual level in the formulation of Schroder, Driver, and Streufert (18). They posit that persons at such a level will be able to process incongruent information to a greater extent than those at a less creative level who use a more rigid,

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black-and-white approach. The congruence between cognitive levels and moral judgment is seen in theories of moral development which are, in actuality, theories of the development of the capacity to deal with cognitive complexity, since moral development is dependent on general experiences related to ego development and ego control (12, 14, 17).

What happens to moral and other social standards when subjects are frustrated? Studies of the social responsibility norm have shown that conformity to moral and other social standards lessened as subjects were frustrated, while successful goal attainment facilitated adherence to societal ideals (2, 4, 5). Whether these effects would be found for adolescents at different levels of cognitive complexity has not been established. Since Barron found creative persons to be low on self-esteem and high on antisocial measures, such persons might be less threatened by failure than noncreative, more authoritarian subjects. Individuals who can tolerate diverse inputs from the environment may not be markedly affected by success or failure. Consequently, it was predicted that subjects high on creativity and low on authoritarianism would be more flexible in moral judgment, as well as less influenced by success and failure, than low creative high authoritarian subjects.

B. METHOD

1. Subjects

The sample consisted of 119 eleventh and twelfth grade students in a liberal coeducational boarding school in the Eastern United States. The age range was from 15 to 18 years with a mean of 16.6. The average *IQ* was 125. Seventy-five of the subjects were male and 44 female. Since sex was not found to be correlated significantly with any of the other variables in the study, no separate analysis by sex was made.

2. Stimulus Materials

The measure of authoritarianism was a true-false version of the California F Scale. This scale was accompanied by a 12-item yeasaying-naysaying test designed to control for acquiescence response set, since all items on the F Scale were keyed for a true response. Subjects who obtained scores of 0, 1, and 11, 12 were dropped from the analysis as representing extremes of yeasaying or naysaying. Only one subject had to be dropped as a result of the use of these criteria.

Creativity was measured in two ways and rank scores combined. One was a

personality test called the Personal Opinion Survey (9) adapted from items used by Child (7) in studying esthetic judgment. The 30 items were actually five short-form tests of six items each concerned with tolerance of complexity, tolerance of ambiguity, scanning, independence of judgment, and regression in the service of the ego. The other creativity measure was Eisenman's (8) preference for complex polygons procedure where subjects chose their preferred shapes. Complexity was defined by the number of points on the polygons. Creative people have been found to obtain high scores on these two tests.

The Verbal Facility Test developed by the experimenter was designed to separate subjects on a purely random basis without regard for intelligence or ability into two groups, labeled "success" and "failure." The instructions stressed the importance of the test and sought to involve the subjects in order that the subsequent manipulation would be convincing. The procedure as described below required each subject to report his score publicly, so that some subjects were made to experience failure, others to experience success.

In the test, the subject was asked to judge whether the definition given for each of 20 foreign words or phrases was true or false. Because of the unfamiliarity of the words, which were from Tagalog, Swahili, and Vietnamese, the essential aspect of the test was that it was a guessing test which thus divided subjects on a random basis. No subjects knew the three languages used. The items that were answered true or false were of the following form: "halimbawa means departure," "hodi means I'm hungry," "eksamen means test," "mwembe means fruit."

The 12-item test of Moral Judgment in Mitigating Circumstances was adapted from one used by Eisenman and Smith (10). First, a 20-item test was administered to two other samples, consisting of 69 females and 32 males. An item analysis technique was used to select those items that discriminated between the high and low scorers by 20 percentage points. High scorers seem to reflect a more moralistic and conventional orientation. Each item stated a general principle modified by mitigating circumstances, such as, "An oath should not be violated even to do something one feels is right." The Kuder-Richardson reliability is .51.

A postexperimental questionnaire was designed to elicit impressions of the subject about the experiment and the extent of his feeling of involvement in it. Subjects indicated on a scale of 1 to 7 how important it was for them to do well, where 1 represented "not important at all" and 7 represented "very important." Each subject's self-rating on this scale constituted his involvement score.

3. Procedure

The test materials were administered in a classroom situation. The subjects were told that this was a study of attitudes and abilities of students on fundamental concerns, and that the experimenter would like to be able to compare them with other students in this area.

Each subject was given a test booklet with personality items followed by the Polygon Preference Test, and then the Verbal Facility Test. Subjects were instructed to work rapidly until they had completed the Verbal Facility Test. When all subjects had completed the Verbal Facility Test, the experimenter read the correct answers and instructed the subjects to mark their own tests and place their scores at the top of the tests. Then the experimenter called for the scores to be put on the blackboard, starting at the top of the distribution. Of a possible 20, the scores ranged from 18 to 5, with the distribution midpoint between scores of 10 and 11. Subjects were told that it had been found that those getting 11 or above had a high level of verbal facility. These subjects were greatly complimented on their "successful" performance. It was pointed out that those with 10 or less did not do too well.

Subjects were then told to continue with the remaining test materials. The Moral Judgment in Mitigating Circumstances Test was then presented, followed by the Postexperimental Questionnaire.

A posttest only design following Campbell and Stanley (6) was used because of the disadvantages of a repeated-testing design. This design was adopted in order to present the material in a single natural package after a pilot study revealed no differences in pretest and posttest only methods.

At the conclusion of the experiment, subjects were given an opportunity to ask questions, and the general purposes of the research were explained. The experimenter described how the Verbal Facility Test had been constructed, and that it was a guessing test to divide subjects into two groups. Care was taken to correct the impression that the Verbal Facility Test measured intelligence.

C. RESULTS

The means and standard deviations for the eight conditions in the experiment are shown in Table 1. There is remarkable consistency in the mean Moral Judgment in Mitigating Circumstances scores for subjects low in authoritarianism, irrespective of creativity or success or failure. In order to test the effects of the three factors, an unweighted means $2 \times 2 \times 2$ analysis of variance was performed. A significant F for the interaction of creativity and success-failure was found ($F = 5.74$, $df = 1/111$, $p < .05$). A significant F was also

TABLE 1

MEAN MORAL JUDGMENTS AND STANDARD DEVIATIONS FOR SUBJECTS CLASSIFIED BY CREATIVITY, AUTHORITARIANISM, AND SUCCESS OR FAILURE

Group	Creativity			
	High		Low	
	High	Low	High	Low
	authoritarian	authoritarian	authoritarian	authoritarian
Success ($N = 60$)				
Mean	4.44	5.17	5.75	4.94
SD	2.13	2.40	3.04	1.84
Failure ($N = 59$)				
Mean	6.55	5.20	3.71	5.18
SD	1.69	2.22	2.11	1.40

found for the three-way interaction between creativity, authoritarianism, and success-failure ($F = 7.04$, $df = 1/111$, $p < .01$).

To further explore the interactions, the Tukey (a) procedure for comparison of differences between means was used (20). A significant difference ($p < .05$) was found among the high authoritarian subjects, with the high creative ones becoming more asocial following failure and the low creative ones, more conventional.

When extreme groups in creativity and authoritarianism were compared on mean moral judgments with success and failure disregarded, a mean of 5.19 for the low authoritarian-high creativity subjects and a mean of 4.70 for the high authoritarian-low creativity subjects were found. A t test of the difference was significant ($t = 2.47$, $p < .02$), indicating that subjects preferring complex experiences were more flexible in their moral judgments in mitigating circumstances.

A correlation of $-.30$ ($p < .01$) was obtained between the involvement score, which represented the subject's rating of how important it was for him to do well, and the moral judgment scale. It is apparent that the subjects who made more flexible, asocial moral judgments felt less concern about doing well on the test battery than those who were more conventional and prosocial. This relationship provides confirming evidence for the characterization of these subjects as independent and nonconventional.

D. DISCUSSION

The present findings indicated that success or failure did not influence subjects low in authoritarianism among middle-class American adolescents. Only the more rigid, high authoritarian individuals were the ones influenced by suc-

cess or failure. Thus, as suggested in the work of Adorno *et al.* (1), low authoritarian subjects are more inner-directed and independent of immediate environmental stimuli, as well as flexible and nonjudgmental.

It was expected that persons who preferred simplicity would react favorably to positive statements about themselves and negatively to unfavorable statements. What was found was that failure produced the greatest conformity in moral judgments in the low creativity, high authoritarian subjects. The tendency of individuals with a preference for simplicity to overgeneralize could contribute to overcautiousness as a consequence of failure, with expansiveness a possible consequence of success.

The impact of failure on low creativity, high authoritarian subjects can be accounted for in terms of the orientation posited by Schroder *et al.* (18). For moderately concrete individuals they suggest that little information is received from the environment due to a filtering-out process. Thus, success or failure may be a more salient experience for subjects preferring simplicity than for those preferring complexity.

These findings are also in line with studies of the authoritarian personality that show that one aspect of a rigid orientation is a lack of mutuality in the area of emotion. Low creative-high authoritarian subjects may perceive relationships among persons in terms of an exchange of "goods," which would account for the finding that when subjects failed they were stricter and more punitive in how they judged others.

Failure for high creative-high authoritarian subjects seemed to move them toward more complexity: that is, to influence them to be freer of conventional restraints and to be more nonjudgmental in their values. In terms of the qualities Barron (3) found associated with creativity, such as gloomy, dissatisfied, pessimistic, and pleasure-seeking, failure could be said to have increased their existing negative or asocial orientation. It is possible that the low self-esteem attributed to highly creative individuals is in part what drives them to creative endeavors. The frustration represented by failure in the experiment led to greater flexibility, measured in this case in terms of moral judgments, as a possible compensation for lack of self-acceptance. If this is so, then the possibility should be considered that the motivation for creativity may come from a sense of dissatisfaction in persons who are cognitively complex. Harvey (13) has characterized a type who is similar to the high creative-high authoritarian individual as low in self-esteem, which is balanced by a desire to be original and different, in one who lacks confidence but avoids dependency.

The findings for high creative-high authoritarian subjects were in accord with Berkowitz's (4, 5) findings that conformity to moral standards was

lessened when subjects were frustrated. Thus Berkowitz's findings were supported for high creative-high authoritarian subjects, but not for other subjects.

E. SUMMARY

This experiment studied some of the factors influencing middle-class American adolescents in their conformity to or divergence from conventional norms, expressed in moral judgments. High creativity and low authoritarianism have been associated with a preference for complex experience leading to tolerance for novelty, contradiction, and information which might be personally threatening. As was predicted, subjects high in creativity and low in authoritarianism were more flexible (asocial) in moral judgment than low creative-authoritarian subjects. Success or failure did not significantly influence low authoritarian subjects. However, high authoritarian subjects reacted differently to failure depending on whether they were high or low in creativity. After failure, high creative-authoritarian subjects became more flexible, while low creative-authoritarian subjects became more conforming.

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Philadelphia Child Guidance Clinic
1700 South Bainbridge Street
Philadelphia, Pennsylvania 19146

HELPING BEHAVIOR AS A FUNCTION OF INTERPERSONAL PERCEPTION*

Department of Psychology, San Diego State College

RICHARD G. GRAY AND JEANNE C. RIDDELL

A. INTRODUCTION

In recent years social scientists have paid increased attention to those variables that affect one person's willingness to help another. Much of the research thus far conducted has directed itself toward situational variables affecting helping behavior. Bryan and Test (3) found that observing a helpful model increased the probability of a subject's offering help. Latane and Rodin (8) reported that a subject was more likely to give help when he was alone rather than in the presence of others, especially if the others were strangers rather than friends. In a field experiment conducted on the New York City subways, Piliavin, Rodin, and Piliavin (10) confirmed the positive effect of an altruistic model. In addition, they found that a person who appeared to be drunk was less likely to receive aid than was someone who appeared to be ill. Further, the race of the victim affected the race of the helper only when the victim appeared drunk. These latter two findings raise several interesting questions. How important are physical characteristics of the victim in determining the probability of his receiving help? And, are the effects of these characteristics dependent upon similar characteristics of the potential good Samaritan?

Several studies, using American subjects, suggest possible answers to these questions. Berkowitz and Friedman (2) found that members of the entrepreneurial middle class were more likely to display a reciprocity orientation toward giving than were people from the bureaucratic middle class. In a help giving situation that did not involve reciprocity, Darley and Latane (6) found that, in general, sex, personality, and background variables of the potential good Samaritans were not predictive of helping. More positive results come from the work of Gaertner (7) who found that politically conservative individuals were more apt to offer help to whites in need of aid than to blacks. Bryan and Test (3) found that Caucasian shoppers at a large department store were significantly more willing to donate money to a Caucasian Salvation Army solicitor than to a Negro solicitor. The authors concluded that interpersonal attraction is a relevant variable affecting donations.

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Such an interpretation presupposes that the opposite results would have been found had the subject population been composed of blacks. Indeed, the research on similarity and interpersonal attraction supports this notion. There is ample evidence correlating similarity and liking (9), and additional evidence suggesting that motivation to aid a dependent person is greater, the higher the liking for him (5). It seems reasonable to predict that from the point of view of a potential good Samaritan, the greater the perceived similarity between himself and a person in need of help, the higher the probability that he will offer such help. The present research tests this hypothesis.

B. METHOD

The experimental conditions consisted of one of four undergraduate students standing next to a 1965 Ford Falcon with a raised hood. The car was stationed on the shoulder of a road at one of three locations. The experimental design was a 3×4 (location by student) factorial. The student, holding an empty gas can, motioned to each passing motorist in an apparent attempt to get a ride to the nearest gas station.

The four students who served in the experiment were as follows: (a) The long hair was a 19-year-old Caucasian male with shoulder-length blond hair. He wore a gray work shirt, blue jeans, and sandals. (b) the short hair was a 19-year-old Caucasian male with a crew cut. He wore a sport shirt, neatly pressed slacks, and shined black shoes. (c) The black was a 20-year-old Negro male with short hair. He wore a sport shirt, slacks, and shoes. (d) The female was a 19-year-old Caucasian female with medium-length hair. She wore a casual blouse and slacks.

The three locations at which the study was conducted were as follows: (a) The Navy area was an access road that led to and from a Naval Station. The decals on the bumpers of vehicles along this road indicated that approximately 80 percent of the cars belonged to military personnel. (b) The black area was a road that passed through the center of the black district of San Diego. It was observed that approximately 75 percent of the cars that passed the experimental location were driven by blacks. (c) The beach area was a road that led into the beach area of San Diego, an area which is known to have a high concentration of what are typically referred to as "hippies." Drivers stopped at a traffic light near the experimental location were questioned and it was concluded that the traffic flow along this route gave a good representation of the population of the beach area.

It should be noted that the three locations differed not only with respect to subject populations but also with respect to such uncontrolled physical variables as speed limit, size of the road shoulder, distance between traffic signals, etc.

The experiment was conducted on Monday, Wednesday, and Friday of two successive weeks between 12:00 and 3:00 p.m. Each treatment condition lasted for the time required for 200 cars to pass the experimental location. Vehicles were counted by two members of the experimental team who remained hidden from view. When someone stopped to offer help, the vehicle count stopped and the good Samaritan was debriefed. As soon as the good Samaritan left, the student resumed his motioning for aid and the vehicle count continued. For the dependent measure, each car that passed without stopping was assigned a "0" and each car that stopped to offer aid was assigned a "1." Although note was made of the attributes of the drivers who stopped, these data were not used as a measure of similarity, since it was felt that experimenter bias might have affected the results, especially in the beach area.

C. RESULTS

The percentages of cars that stopped as a function of the experimental conditions are shown in Table 1. A 3×4 (location by student) analysis of variance was performed on the dichotomous data.¹ The main effect of Student

TABLE 1
PERCENTAGE OF CARS STOPPING AS A FUNCTION OF EXPERIMENTAL GROUP

Location	Student				Mean
	Long hair	Black	Short hair	Female	
Black	18.5	24.1	28.3	30.6	24.9
Beach	17.5	22.0	13.3	22.0	18.5
Navy	7.8	12.0	21.2	20.5	15.3
Mean	14.4	19.4	20.2	24.5	19.6

Note: Any two student means not underscored by the same line are significantly different ($p < .05$).

was significant at the .01 level of confidence ($F = 7.39$, $df = 3/2388$). Duncan's New Multiple Range Test was used to compare the mean for each student with the mean for every other student. The results of this test are shown in Table 1. As can be seen, the female did better than both the long hair and the black, but no better than the short hair. The short hair outscored the long hair, but not the black. Finally, the black did better than the long hair.

Simple effects tests were performed on the reliable interaction effect ($F = 2.61$, $df = 6/2388$, $p < .05$). These tests were not directed at the scores for the female, since those scores were consistently high at all locations and

¹ A rationale for treating the data as if the measurements were normally distributed is given by Cochran (4).

were not directly relevant to the experimental hypothesis. The only significant effects were as follows: In the black area, the short hair did better than the long hair ($F = 4.43$, $df = 1/2388$, $p < .05$). In the beach area, the black did better than the short hair ($F = 5.43$, $df = 1/2388$, $p < .05$). In the navy area, the short hair outscored both the long hair and the black ($F = 13.26$ and $F = 6.10$, respectively, $df = 1/2388$, $p < .05$).

D. DISCUSSION

The experimental hypothesis was that from the point of view of a potential good Samaritan, the greater the perceived similarity between himself and a person in need of help, the higher the probability that he will offer such help. The results, especially from the navy area, lend support to the hypothesis. In the navy area, the student who most clearly resembled a member of the military (the short hair) received significantly more offers of help than did the black or the long hair.

The results obtained in the beach and black areas are not so clear-cut. In the beach area, only the short hair did poorly, while in the black area only the long hair was discriminated against. These results, coupled with those from the navy area, are quite compatible with the findings reported by Gaertner (7). He found that politically conservative people tended to show greater social responsibility toward others of their own kind (in his study, Caucasians), while those with a liberal political orientation were less concerned with *who* required assistance and tended to offer aid in a more egalitarian manner. It seems safe to assume that the naval personnel in the present study were the most politically conservative of the three subject groups and, in fact, it was these subjects who were most discriminating in terms of the particular students to whom they offered aid. Perhaps, the range of those perceived as similar is narrowest where ingroup-outgroup differences are stressed and group unity is emphasized: e.g., the military.

The finding that the female did well at all locations is consistent with results reported by Berkowitz (1) which indicate that people are more willing to help someone who is highly dependent upon them than someone who is not so dependent. It is highly probable that the female caught in the present experimental predicament was perceived as more helpless than were the males.

The finding that perceived similarity appears to be a variable relevant to help giving behavior suggests several questions which might be answered through additional research. Does perceived similarity necessarily imply that the potential good Samaritan assumes some sort of attitudinal similarity based

upon the victim's physical characteristics? Or, given a critical situation in which property or human life were at stake, would the physical characteristics of the victim still affect the probability of his receiving help?

E. SUMMARY

This study investigated the frequency with which three subject populations (military, Negro, and "hippy") offered assistance to a stranded motorist (either a long haired male, a short haired male, a Negro male, or a female). The results indicated that the military was the group most affected by the physical characteristics of the stranded motorist, while the Negro and "hippy" populations appeared to be more egalitarian in offering their assistance. It was suggested that perceived similarity affected the probability of the stranded motorist receiving aid.

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Department of Psychology
San Diego State College
San Diego, California 92115

EFFECTS OF ECONOMIC THREAT ON ANOMIA AND PERCEIVED LOCUS OF CONTROL* ¹

State University of New York, College at Geneseo

RAYMOND N. WOLFE

A. INTRODUCTION

The work of Rotter and his associates on perceived locus of control has resulted in a considerable body of evidence supporting the construct validity of a generalized expectancy for internal *versus* external control of reinforcement. Studies summarized by Rotter (9) and Lefcourt (3) demonstrate that this expectancy can be measured reliably by a variety of methods, and that it is useful for the prediction of an impressive range of control-related behaviors. Most of these investigations have been designed to anchor perceived locus of control on the response side, by assessing its effects on several kinds of performance. There have been few attempts to explore conditions, other than experimental instructions, which might be likely to influence the generalized expectancy itself.

The opposite is generally true of anomia, the sociological counterpart of high expectancy for external control. Anomia, a constellation of attitudes that includes pessimism, despair, and a pervasive sense of individual helplessness, is viewed as a product of social crisis or of defective social structure; consequently, a large proportion of the research on anomia is aimed at specifying the social forces that generate it (4).

In spite of their definitional similarity, anomia and belief in external control have seldom been directly compared. Originating in separate disciplines, the two constructs have played central roles in quite different research traditions, with anomia typically studied as a dependent variable in adult samples, and externality as a predictor variable in college samples. The literature, therefore, provides very little information pertaining to the problem posed by their apparent overlap. In the absence of parallel forms of evidence, there is no way to assess the similarity of their causes or effects.

Anomia and powerlessness, a sociological version of externality measured by an abbreviated form of the Internal *versus* External Locus of Control scale,

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I-E scale (9), have been studied together by Seeman and his colleagues. Neal and Seeman (7) and Seeman (10) report significant correlations, but argue for the separability of the two constructs on the grounds that their patterns of variation do not correspond when each is related to a third variable, membership in work organizations. A factor analysis of the dimensions of alienation (5, 6), which might have contributed importantly toward a solution of the problem, yielded inconclusive results concerning the separability of anomia from economic and political powerlessness.

The actual similarity between anomia and externality can perhaps best be assessed by studying both in situations likely to produce changes in either, or where either has demonstrably reliable effects. The present investigation considers one such situation. Circumstances of clearly defined economic threat, a social condition known to elevate anomia (1, 8), provided an opportunity for close examination of both constructs in a natural process research setting.

B. METHOD

A community of some 6000 residents in New York State was faced with the threat of serious economic difficulty when the United States Veterans Administration announced plans to phase out and close a VA Center located in the community. This Center was a major factor in the community's economy, employing approximately 600 of its residents and contributing less directly to the livelihood of many others. The announcement of plans to close the Center allowed about four months for the gradual termination of its operations.

Much of the extensive local publicity following the announcement documented the financial hardships that the scheduled closing would impose directly upon the businesses and residents of the community. Local businessmen drafted a variety of appeals and petitions, directing them to public officials at the state and national levels, and to VA Central Office. Impending economic disaster was cited in many of these appeals, as well as in nearly all of the local publicity; one recurrent theme was that the community would become a "ghost town" if the Center were closed.

During this crisis, questionnaires containing demographic items, Srole's Anomia scale (11), and the I-E scale were administered to VA employees working at the Center scheduled to be closed (VA sample), adult residents of the community in crisis (CC sample), and adult residents of another community having a more favorable outlook (Control sample). The control community was located 50 miles from the community in crisis, and was similar to it in terms of size and past prosperity.

CC and Control samples were selected on the basis of an area sampling procedure in which each community was divided roughly into geographic quadrants. Two residence areas were selected to represent each quadrant. Within these areas, every third residence unit was visited between 10 A.M. and 9 P.M. on weekdays and Saturdays. Residence units were skipped if no adult was immediately available. Each adult was asked to complete the three-page questionnaire as "part of a project sponsored by the State University, to study the attitudes and opinions of the people of this community." The questionnaire was left with the prospective respondent, who was asked to remain anonymous and to fill out the form completely and as soon as possible. Completed questionnaires were collected between one and three hours after being distributed; if the questionnaire was not filled out during this time, the respondent was asked to finish it as soon as possible and mail it to the investigator. Stamped, self-addressed envelopes were provided for this purpose. No callbacks were made.

Of 244 prospective respondents in the community in crisis, 17 refused to participate, 18 failed to mail in the completed questionnaire, and 13 produced incomplete questionnaires, leaving a total of 196 usable records of which 39 were returned by mail. In the control community, of 227 prospective respondents, 22 refused to participate, 16 did not return the questionnaire, and eight records were unusable, leaving 181 as the total *N* for the Control sample. Forty-five of these were returned by mail. Within the CC and Control samples, there were no significant differences between mail-ins and immediately collected questionnaires with regard to demographic variables, anomia scores, or I-E scores. The two kinds of returns were therefore combined in analysis of results.

VA employees were not sampled as systematically as community residents. Questionnaires were sent from the Center's Psychological Research Office to 260 employees, who were asked to fill them out anonymously. The 72 employees returning usable questionnaires comprised the VA sample.²

Responses to the Srole items were made on a five-point scale: Strongly

² The author is indebted to Dr. Gunars Reimanis, who gathered the data from the VA sample. Reimanis (8) has speculated that the low rate of return from this sample reflects low employee morale, due largely to the closing order itself. Prior to the closing order, a separate survey carried out by similar methods at this VA Center yielded a return rate of 85%; the present return rate is 28%. Representativeness of the VA sample is clearly open to question, and the data provide little basis for comparing it with other groups of employees at the Center. Mean age (44.90) and educational level (11.57) of the present sample do, however, fall within the narrow ranges reported for these variables by Reimanis (8), whose study included a group of 151 VA employees.

Agree, Agree, Undecided, Disagree, Strongly Disagree. A score of 0-4 was possible on each item, yielding a possible range of 0-20. The I-E scale was presented in its usual forced-choice form, and scored for endorsement of external control statements; possible range of scores was 0-23.

C. RESULTS

The samples did not differ significantly in age, education, or proportion of males to females. There were no significant within-sample sex differences in age, education, anomia, or externality. Age was unrelated to anomia and externality, but was negatively related to educational level in the CC and Control samples.

The correlations summarized in Table 1 reveal a similar pattern of interrelationships among education, anomia, and externality in each sample; anomia and externality were directly related, and educational level was inversely related to both. Education showed a stronger relationship with anomia than with externality. The difference between these two coefficients was significant in the VA ($p < .025$, two-tailed) and Control ($p < .025$, two-tailed) samples. Partialling out education effects reduced the anomia \times externality coefficients to .38, .38, and .42 for the VA, CC, and Control samples, respectively. Other investigators using the Srole scale and some version of the I-E scale have reported correlations of .33 for 458 adult working males in Columbus, Ohio (7); .37 for 282 male manual workers in Malmo, Sweden (10); and .39 for 171 male nonmanual workers in Malmo, Sweden (10) between anomia and belief in external control. Comparison of these statistics and the anomia \times externality coefficients of Table 1 indicated that the six correlations were sufficiently similar to be regarded as estimates of a single population value (2).

TABLE 1
CORRELATION MATRIX

Sample	Anomia	Externality
VA ($N = 72$)		
Education	— .56	— .35
Anomia		.49
CC ($N = 196$)		
Education	— .32	— .23
Anomia		.42
Control ($N = 181$)		
Education	— .41	— .22
Anomia		.48

Note: All coefficients are significant at the .005 level.

Analysis of variance by Winer's (12) unweighted means method revealed that educational level and economic threat each exerted significant main effects on both anomia and externality. There were no interaction effects. The assumption of homogeneity of variance across samples was supported for anomia and for externality by Bartlett's chi-square test.

A dissimilarity in the two patterns of economic threat effects was indicated by the comparisons summarized in Table 3. Anomia was influenced by the gross dichotomy of threat *versus* no threat, while externality scores were significantly higher in the VA sample than in either of the other samples.

D. DISCUSSION

Taken as a whole, the findings suggest that the correspondence between anomia and externality goes beyond the obvious definitional similarity. Both

TABLE 2
ANALYSIS OF VARIANCE OF EFFECTS OF EDUCATIONAL LEVEL AND
ECONOMIC THREAT ON ANOMIA AND EXTERNALITY

Source	SS	df	MS	F
Anomia				
Educational level	1348.90	2	674.45	34.11**
Economic threat	298.79	2	149.40	7.57**
Education \times Econ. threat	78.83	4	19.70	1.00
Within cells	8701.17	440	19.77	
Externality				
Educational level	568.76	2	284.38	13.05**
Economic threat	186.00	2	93.00	4.27*
Education \times Econ. threat	188.31	4	47.07	2.16
Within cells	9538.09	440	21.79	

* $p < .05$.

** $p < .01$.

TABLE 3
MEAN SCORES IN THREE SAMPLES

MEAN SCORES IN THREE CATEGORIES			
Sample	Mean	t^a	p^b
Anomia			
VA	9.01	3.39**	.86
CC	9.57	5.54**	
Control	6.94		
Externality			
VA	8.24	2.78**	2.31*
CC	6.87	1.79	
Control	6.05		

^a Comparison of VA and CC with Control.

^b Comparison of VA with CC.

* $p < .05$.

** $p < .01$.

were influenced in the same direction by individual differences in education and by a social condition known to affect anomia. Correlational analysis demonstrated a relatively strong and stable relationship, which was not affected by the presence of the critical social condition. This relationship did not vary when samples from quite different populations were compared, and was not significantly reduced by partialling out education effects.

Despite the generally congruent patterns of findings for the two constructs, the results do not provide a conclusive demonstration of their empirical similarity. Methodological limitations of the study, as well as some aspects of the findings, suggest the need for more cautious interpretation. Part of the observed congruence may be due to method similarity alone, or to the combined effects of method similarity and a generalized negative affect produced by the crisis situation. It is possible that any instruments sensitive to the dimension of positive *versus* negative affect would have yielded results comparable to those obtained with the I-E and anomia scales.

Two differences were found between anomia and externality: educational level was more strongly related to anomia than to externality, and different patterns of susceptibility to economic threat were observed in the between-group comparisons. The latter findings can be regarded as evidence for the separability of the two constructs, since the theoretical contexts from which the two are derived are capable of explaining the patterns that emerged. Table 3 suggests that externality scores were reflecting degree or directness of threat in a way that anomia scores were not. Anomia, a product of certain kinds of social conditions, was observed to be high in two groups confronted by one such condition, and low in a group not exposed to this condition. The same condition also affected externality, but not in the same all-or-none fashion. Its effects on externality were graduated, mitigated presumably by the individual's subjective interpretation of its bearing on his own life. Since the decision to close the VA Center carried unmistakable implications for the lives of VA employees, it is not surprising that externality scores were higher in this sample than in the CC sample.

The individual who believes strongly in his ability to determine personally relevant outcomes is both resistive to social influence and "more alert to those aspects of the environment which provide useful information for his future behavior" (9, p. 25). It is possible that persons with belief in internal control prior to the onset of the crisis situation perceived the threat accurately in terms of its relevance for themselves, altered their expectancies accordingly, and consequently were largely responsible for the observed stepwise effects of economic threat on externality. This line of speculation leaves unanswered

the question of why comparable effects were not observed for anomia, and limits quite severely alternatives to the conclusion that the two attitudes are not identically influenced by economic threat. To continue at this point to argue for their similarity would require that attention be directed to idiosyncrasies of sampling or measurement. But questions concerning, for example, representativeness of the VA sample, or relative susceptibility of the I-E and anomia scales to generalized negative affect, cannot be answered from the present data.

The results indicate that while the domains of anomia and externality overlap to a considerable extent, they are separable in at least one important respect. Further clarification of their dimensions of similarity is necessary, and can be accomplished by studying both together in experiments designed to test hypotheses about either.

E. SUMMARY

A social crisis provided the opportunity to study one aspect of the empirical similarity between anomia and belief in external control, two constructs seldom studied together in spite of their strong definitional similarity. Both were measured in two samples of American adults exposed to clearly defined economic threat, and in a control sample. Main effects of threat were significant and in the same direction for both, as were effects of educational background. However, dissimilar patterns of threat effects were found for the two constructs, demonstrating an important aspect of their separability.

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Department of Psychology
State University of New York at Geneseo
Geneseo, New York 14454

RESPONSES TO PERSISTENT SOCIAL INTERFERENCE: A RESPONSE HIERARCHY OF INFLUENCE TACTICS IN SOCIAL EXCHANGE*¹

Department of Sociology, Washington State University

BRUCE A. CHADWICK AND ROBERT C. DAY

A. INTRODUCTION

The organization of behavior into response hierarchies has been the focus of attention of several researchers (4, 6, 7). The earliest discussion of response hierarchies of aggressive human behavior occurred in an article by Miller (6). He argued that aggressive responses may occupy any one of a number of positions in the hierarchy of instigations aroused by blockage of goal responses, depending on the relative success of aggressive *versus* nonaggressive responses in the past for achieving desired ends. Miller recommended additional research on the positioning of aggression in response hierarchies and stressed the negative influence of punishment in this regard. He referred the reader to the work of Hull (2, 3) who utilized in later writings (4) the concept of the "habit-family hierarchy" of responses to provide a synthesizing theory for a great deal of prior animal research. The thrust of Hull's work is that the response that will achieve the desired outcome with the *least* expenditure of work will be the dominant response in the hierarchy. The second least costly behavior in terms of work expended will be the next strongest response and so on throughout the entire repertoire. It should be noted that "expenditure of work" in Hull's formulation refers to time and energy dimensions, but the concept could be expanded when applied to humans, to include the dimension of "social costs," such as disapproval and rejection received for varying degrees of aggressive behavior.

Behavioral psychologists, such as Staats and Staats (7), argue that reinforcement history, including both reinforcement and punishment of varied aggressive responses, determines what types of responses will be included and where they are positioned in response hierarchies. These theoretical considerations suggest the hypothesis that aggressive responses to the blockage of goal-

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oriented behavior in specific social situations will become organized over time into a hierarchy in which the dominant response is a type of aggressive behavior that gains the reinforcing goal with the least social or physical "cost." The dominant response in the individual's repertoire will be the aggressive act that in the past has been most successful in removing the interference while incurring the least cost. If the dominant response is not successful, then the individual will cycle to the second most effective response in his repertoire which will probably be more aggressive towards the interfering agent while running the risk of incurring greater costs. The purpose of this paper is to report two laboratory investigations testing the proposition that aggressive responses to persistent goal interference in social exchange in fact occur as a sequential hierarchy of progressively more and more aggressive behaviors.

B. EXPERIMENT 1

1. *Method*

Subjects were 26 male college students recruited from ROTC classes² (1). The experimental task was a matrix game involving a series of five-to-ten-minute trials in which a team of two subjects and a confederate "leader" attempted to win varying amounts of money. The general goal of the three-man team was to discuss various solutions to a matrix task and to make competing suggestions which the leader (confederate) then used to make the final choice for the group at the end of each five-minute trial. If the solution for that trial was correct, the entire group won money; if it was incorrect, everyone lost. Due to the fact that the leader was programmed to provide goal interference systematically by purposely avoiding winning decisions, even when such decisions were fairly obvious, the subjects immediately began to use various verbal influence strategies to persuade the leader to alter his decisions. The content of the transcribed tapes of each session were carefully scrutinized to derive a full set of meaningful verbal categories. Several competing sets of categories were developed, but the relatively simple one presented below was chosen as providing the best fit with the verbal data.

1. *Suggestions.* These remarks are proposed solutions to the group's task. Examples from the tape include: "Let's try violet³ again." "I suggest we try F."

² The nonverbal data from this experiment were previously published and include an extended discussion (1) of the methods employed.

³ The matrix game involved rows, designated by color, and columns designated by alphabetic letters. Thus the suggestions in the example contain references to the manipulation of colors and letters.

2. *Evaluations.* These remarks directly or inferentially place a positive or negative value on previous suggestions. They are offered in a fairly detached manner carrying neutral affect to encourage but not demand a choice among alternatives. Examples: "I think it is our best bet right now." "Green has the highest number in it, so I think we should choose it to maximize our chances."

3. *Pressure Attempts.* These remarks, in verbal content and/or emotional tone, clearly make an attempt to urge, push or demand the other person to alter his behavior. In contrast to the detachment of evaluations, pressured remarks are imbued with moderate affect in voice tone, but do not imply a desire to punish the other. Examples: "This system has *proved* itself seven out of seven times." "Explain yourself. You can't give me a logical reason why you made that choice."

4. *Indirect Aggression.* These remarks imply a desire to punish the leader through sarcasm, ridicule, cynicism, and involve higher degrees of negative affect, but do not explicitly punish the target. Examples: "Oh Christ, what happened, you agree with me." "You're supposed to be a leader?"

5. *Direct Aggression.* These are remarks which overtly and directly attack and punish the target person. Examples: "You're an idiot!" "You're so *stupid*, it's unbelievable!" "You bastard!"

The coding task was accomplished by two coders working independently. Both content and voice inflection were used in classifying the verbal statements into the various categories. The level of intercoder reliability was .92.

2. Results and Discussion

Once the statements were coded it was possible to determine if the subjects' verbal behavior cycled as predicted by the response hierarchy hypothesis. The sequence of remarks of the subjects was analyzed to ascertain to what degree and how consistently persons shifted from suggestions, to evaluations, to pressure remarks, to indirect aggression, and to direct aggression without passing over intermediate levels (i.e., using an aggressive remark after an evaluation and thus omitting a pressured remark, etc.). It was found that 89 percent of the verbal statements made by the 26 subjects were in the predicted hierarchical order. In other words, when subjects moved from one influence level in the hierarchy to another, only 11 percent of the remarks skipped or omitted levels. It was also discovered that often the two subjects formed a coalition and cycled consistently with synchronized responses through the influence hierarchy. There were individual variations in the rates at which subjects progressed through the hierarchy, but the sequential movement from

level to level was quite consistent. These initial findings tend to verify the occurrence of the verbal response hierarchy in the given experimental situation of persistent social interference.

C. EXPERIMENT 2

1. *Methods*

In the first study the same verbal data were used to develop the system of verbal categories, as well as to test the hierarchy hypothesis; thus data obtained in this subsequent study provide a necessary independent test of the hypothesis. The follow-up experiment differed from the first in three important respects. First, in order to eliminate the problem of competition between subjects for talking time which may distort the functioning of the individual hierarchies, the group included only one naive subject and one confederate. The experimenters wanted to determine the use of a verbal hierarchy in a face-to-face situation and, thus, the subjects were placed together in the same room rather than in separate cubicles as in the previous experiment. In the follow-up study each subject was in the experimental situation for approximately ten hours, including at least 300 two-minute trials rather than the hour required by experiment one. About four hours of this time involved the conditions necessary to test the verbal response hierarchy adequately. This additional length of time and shorter trials provided the subjects greater exposure to the confederate's interfering behavior and thus provided greater opportunity for them to cycle completely through the full range of their hierarchies and to reveal the degree of repetition and patterning in the responses utilized. Ten subjects from sociology and psychology classes were given the experimental treatment but, due to recording problems, full tapes on only six subjects were used in the final analysis. The tapes were transcribed and independently coded by two persons. The intercoder reliability obtained was .94.

2. *Results and Discussion*

After coding the interaction it was possible to count the number of verbal statements that did not fit the predicted response pattern. Of the total of 1291 responses emitted by the six subjects, only 33 remarks, or 2.6 percent, were not in the order predicted by the hierarchy hypothesis.

It is interesting to note that 27 of the 33 statements occurring out of sequence were skips of the indirect aggression category. In these cases the

subjects cycled from pressure attempts right into direct aggression, omitting the indirect aggression. It appears that in the early cycles through the hierarchy all the subjects included indirect aggression, but as they continued to interact further, several dropped the indirect approach to the situation and moved from pressure attempts to direct aggression.

A second method of analyzing the data to determine the support for the response hierarchy hypothesis was the application of a scaling technique developed by Leik and Matthews (5) to test for developmental processes. This test is similar to Guttman scaling procedures with the major difference being that early traits in the hierarchy may be dropped as one progresses through the sequence of responses. The developmental scale provides a significance test comparing the obtained ordering to a random ordering hypothesis, as well as an index of scalability which assesses the proportional improvement over expected error obtained in the data compared again to random ordering. According to Leik and Matthews this coefficient of scalability is analogous to the computation of scalability for Guttman scales and is interpretable in the same manner (5, p. 71).

The z value obtained with the verbal data is 12.08, which indicates that the difference between the obtained and a random ordering is extremely significant ($p < .0001$). The coefficient of scalability for the verbal data is .879, which indicates a very strong tendency for individuals in a situation of persistent goal interference to follow an orderly developmental process in their influence attempts.

The results of these two experiments provided initial support for the hypothesis that verbal responses within dyads and triads, experiencing repeated, persistent social interference from a leader or a peer, tended to cycle in a very patterned way through a hierarchy of escalating aggressive responses. The five-step hierarchy discovered in the first experimental situation using university undergraduates was independently verified as operative in the second experiment utilizing the same type of population over an extended interaction period. The cycling pattern observed in the initial experiment using two subordinates and a confederate leader (i.e., a three-person group), occurred with even greater regularity and consistency in the later situation where only one subordinate was responding in face-to-face interaction with the frustrating confederate.

Several questions are raised for future research: What are the factors that lead to the incorporation of a given response into the repertoire and what factors influence the positioning of the various responses within the hierarchy?

D. SUMMARY

Verbal responses to persistent goal interference applied by a trained confederate in dyadic and triadic groups were studied in two experimental studies. The verbal behavior of 30 university students participating in a matrix game was recorded, transcribed and coded into a set of categories of varied influence tactics. Analysis of the data revealed that the influence tactics employed by subjects to change the blocking agent's behavior followed a consistent pattern of cycling through an ordered response hierarchy. The initially dominant responses to interference consisted of problem-solving suggestions and evaluations, followed by pressuring remarks, indirect and direct aggression. Under the varied conditions of two separate experiments, only 11 percent and 2.6 percent of the verbal responses failed to fit into the designated response hierarchy. The hierarchy pattern in the latter study varied from random ordering of events at a level of significance far exceeding the .001 level and achieved a coefficient of scalability of .879.

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Department of Rural Sociology
Washington State University
Pullman, Washington 99163

DEVIANCY AND CHOICE IN COOPERATIVE AND PUNISHMENT SITUATIONS*

Oregon State University

KNUD S. LARSEN

A. INTRODUCTION

Freedman and Doob observed that deviancy can be defined simply as "being different from the surrounding norms" (3, p. 4). Deviancy may be a real phenomenon, but can also be manipulated by experimenters. In the latter case the subject is informed that his opinion and/or positions are different from some comparison groups. The method had been employed for example by Festinger (2) and Schachter (4).

Feeling deviant may have certain consequences for behavior. Freedman and Doob found in their laboratory studies that students can be made to feel deviant and that deviants prefer to affiliate with other deviants in preference over nondeviants. These findings tended to support Festinger's social comparison theory which suggests that people have a need to affiliate with people who are similar to themselves. One obvious question is, "Do people, regardless of deviancy, prefer to affiliate with people similar to themselves in all situations?" It may, for example, be that people who are high on some norm would prefer someone who is similar, but that people who are low would prefer people who are high on the norm. It may also be that affiliation preferences are situation specific and would not generalize beyond a given situation. A partial attempt was made to answer these questions in the current study. In particular we were interested in the affiliation preferences of induced deviant subjects in a contrived situation of cooperation and punishment. On the basis of Festinger's social comparison theory it was predicted that both deviant and nondeviant Ss would prefer to work with similar Ss in the two situations.

B. METHOD

The design of the experiment involved inducing Ss to believe that they were deviant on a personality measure and then asking them to choose partners for a learning experiment in a situation of cooperation and punishment.

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1. Subjects

A haphazard sample of 50 college undergraduates was employed in the study. These Ss were tested in groups of five.

2. Experimental Variables and Procedure

The Ss were initially asked to draw a code letter for subsequent anonymous identification. They then completed Bell's Adjustment Inventory (1) and were told that it measured personality adjustment. Freedman and Doob (3) used this procedure and chose the concept of personality because it had real interest for people and, yet, has the advantage of being vague so as to make subsequent bogus feedback more believable. The Ss were told that the information from the inventory was useful to the investigators and in return for their participation they would receive their score as compared to the scores of other participants. The E left the room and returned a short time later with a bogus feedback sheet for each S. Out of the total sample 14 Ss were identified as high deviants (scale scores from 60-80, 24 were placed in the middle (control) group (scale scores from 35-45 and 12 Ss in the low deviant group (scale scores from 0-20).

Each S was asked to help in another study which concerned their preference to work with other people in two situations. E explained that he was in the process of preparing a learning experiment. In order to complete the experiment effectively he needed some information on affiliation preferences in the two situations. The Ss were told that they would hypothetically change roles of teacher and learner with another person in two situations: one in which the teacher employed *cooperation* and the other *punishment* as the basic inducement for learning. The Ss then marked a sheet containing two lines representing the two situations. The lines were marked from 0 to 80 and were similar to the one's provided in the bogus feedback sheet. The Ss were told that the lines represented scale scores from the Bell's adjustment inventory and to select the scale score of the person they would like to work with in the two situations. The Ss were dehoaxed upon completion of the experiment.

C. RESULTS AND DISCUSSION

The mean preference scale score for the cooperative situation was 29.33 for the low deviants (LD), 38.37 for the controls (C), and 51.71 for the high deviants (HD). The t value between the LD and C group was 2.06 ($p \leq .05$), the standard deviation 16.17 and 10.18 respectively. The t value between HD and C was -3.18 ($p \leq .001$) and the standard deviation for HD, was 15.71

For the punishment situation the mean score for LD was 40.83, for C 41.25, and for HD 43.00. The mean differences between groups were not significant.

In short, the results showed that all Ss, regardless of the direction of deviance, preferred to affiliate with people like themselves in a hypothetical cooperative situation, but chose individuals from the middle (control) of a personality measure for a potential punishment situation (where they would receive punishment part of the time). Why was there this difference in preference for affiliation depending on the situation? It could be argued that in the cooperative situation there was little threat and consequently people preferred individuals like themselves. In the punishment situation which contained threat the deviant Ss did not trust other deviant Ss and perceived more stability and less threat from Ss in the middle ranges (remember the hypothetical scores reflected a personality adjustment measure). It is clear that the affiliation preferences were to a large extent situation dependent.

D. SUMMARY

Induced deviant Ss were requested to choose the scale score from a personality measure for the type of person they preferred to participate with them in a learning experiment. The two conditions of the learning experiment were cooperation and punishment. In the cooperation situation all Ss regardless of deviancy chose partners similar to themselves. On the other hand in the punishment situation all Ss chose partners from the middle ranges of scores. The results were interpreted in terms of the the potential threat in the two situations.

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Department of Psychology
Oregon State University
Corvallis, Oregon 97330



ATTITUDINAL AFFECT AND BEHAVIORAL INTENTIONS*¹

Department of Psychology, University of Illinois

KEITH M. KILTY²

A. INTRODUCTION

According to Fishbein (2), the attitude (or affect) toward a psychological object is a function of the strength of the beliefs or cognitions about the attitude object and of the evaluative aspects of those beliefs. Recently, Fishbein (3) proposed a corollary to this hypothesis by substituting behavioral intentions for beliefs. In essence, this formulation effectively reduces behavioral intentions to a special subclass of general beliefs or cognitions. The present study was a test of this proposition.

B. METHOD

1. *General Design*

Since several attitude objects and instruments were used, the study was designed in terms of the Campbell and Fiske (1) multitrait-multimethod matrix, a procedure that not only establishes convergent but also discriminant validity (i.e., the ability of instruments measuring different constructs to differentiate among themselves and also to discriminate between different attitude objects).

2. *Subjects*

The subjects were 80 white male and female students from an introductory social psychology course at the University of Illinois, who were paid for their participation.

3. *Instruments and Procedure*

Six attitude objects were used, including four simple person stimuli (A GERMAN, A NEGRO, A WOMAN, and A DISABLED PERSON) and two complex stimuli of the sort used by Triandis (8) in his studies with his behavioral differential.

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² Now at Yale University.

a. *Affect*. Semantic differential (SD) evaluations of all six person stimuli were obtained as the primary measure of attitudinal affect. Five 8-point evaluative scales were used, the reliability of the summed scales approximately .85 (6).

For the four simple stimuli, Likert-type attitude scales, all adapted from Shaw and Wright (7), were employed as a second measure of attitudinal affect. Each scale was 14 items long, and each item was responded to on a 5-point *agree-disagree* scale. Corrected split-half reliabilities for these scales were satisfactory, ranging from .76 to .83.

b. *Behavioral intentions*. Triandis' (8, 9) behavioral differential (BD) was used as the measure of behavioral intentions. These scales require subjects to rate how much they feel they would or would not perform some behavior toward some person (e.g., invite this person to my club, admire the character of this person, work with this person). Subjects rated each person stimulus on 25 of these scales, consisting of five representative scales taken from each of the five most commonly obtained factors (e.g., respect, social distance). Median reliability across factors for the BD is .92 (9).

Since Fishbein's (3) formulation also requires obtaining the evaluative aspects of the behavioral intentions, the 25 BD scales, lastly, were treated as the concepts to be rated on evaluative SD scales (i.e., the behaviors were rated on the SD scales).

Scores were then obtained by weighting each behavioral differential rating by the appropriate evaluative rating for that behavior and summing all such products. These scores have an estimated reliability of .78.

It should be noted that behavioral intentions as measured by the BD are multidimensional. BD scores are usually obtained by first factor analyzing the responses to the scales; scores are then derived for each factor by summing the ratings of the scales associated with that factor. Since this procedure was followed in the present study, the generality of Fishbein's (3) formulation was necessarily limited. Implicit in Fishbein's theory is the assumption that any set of beliefs is unidimensional and that scores for all individual beliefs in the set can be summed to produce an overall score. This is not, however, the case with behavioral intentions, the existence of several independent dimensions having been well-documented. An overall summation of behavioral intentions weighted by the affect associated with the specific behaviors would have yielded scores incapable of systematically correlating with a measure of attitudinal affect. As a result, scores were derived for each factor or dimension, each one, in this sense, representing a different measure of behavioral intentions.

Since any specific BD factor structure is dependent on the stimuli employed

(9), the scales were factor analyzed separately by concept, using the principal axis method with varimax rotation to simple structure (4). The resulting number of factors for the various concepts ranged from three to six.

C. RESULTS

The complete multitrait-multimethod matrix was based upon a total of 68 variables and included almost 2,300 correlations. For ease in presentation, the results will be discussed in terms of a multimethod matrix for each attitude object.³ In order to control for chance effects, the significance level was set at $p < .001$.

1. *Affect and Weighted Behavioral Intentions*

According to Fishbein's (3) hypothesis, high and positive correlations should be found between standard measures of attitudinal affect and weighted behavioral intentions scores.

For the first concept, A GERMAN, only four of the 12 relevant correlations were significant at the .001 level (which, with $N = 80$, requires a coefficient of just .35). The mean correlation between the weighted behavioral intentions scores and the SD scores was .32 (after Fischer z transformation, as was the case with all other mean correlations), while, with the Likert scale scores, it was .25.

Results for the remaining five concepts were much the same. The number of significant correlations for the concepts ranged from none to about half, and all significant correlations were quite low. Mean correlations were on the same order as those for A GERMAN, ranging from .24 to .39 for the correlations between weighted BD scores and SD scores; correlations between behavioral intentions and the Likert scale scores were somewhat lower, means ranging from .19 to .27 for the remaining three simple stimuli.

In sum, across all concepts, the correlations were generally low and non-significant, not supporting the hypothesis.

2. *Weighted and Standard Behavioral Intentions*

Fishbein's (3) theory maintains that behavioral intentions can be used to predict attitudinal affect only after they have been appropriately weighted by the evaluative aspects of the behavioral intentions. Unweighted behavioral

³ The six tables and a summary of the BD factors by concept have been deposited with the National Auxiliary Publications Service. Order Document No. 01683 from CCMIC National Auxiliary Publications Service, 909 3rd Avenue, New York, New York 10022. Remit in advance \$5.00 for photocopy or \$2.00 for microfiche. The tables and more detail concerning the BD factor structures may also be found in Kilty (5).

intentions (or standard BD scores) should not correlate with measures of attitudinal affect. As a corollary, no correlation should be found between standard and weighted behavioral intentions scores.

For A GERMAN, three of the 12 relevant correlations were significant. The mean correlation between the standard BD scores and the SD scores was .20, and, with the Likert scores, .29. Results for the other concepts were again very similar, means for the SD-BD correlations ranging from .16 to .30 and for the BD-Likert correlations from .06 to .32.

Although these correlations were also generally low and nonsignificant, the number of significant correlations and the magnitudes were approximately the same as those for the correlations between the affect and weighted BD scores. Weighing the behavioral intentions by the affect associated with the behaviors would seem to have brought about little increase in their ability to predict the overall affect toward the attitude objects. These results indicate a lack of discriminant validity between weighted and standard behavioral intentions scores.

Furthermore, the corollary was not supported. Direct correlations between weighted and standard BD scores produced the strongest relationships found in the present study. The means for these correlations ranged from .71 to .81, a final indication of the lack of discriminant validity.

3. *Comparisons Across Concepts*

The multitrait-multimethod matrix approach also entails taking into account relationships among the traits for the same measures (1). However, it should be noted that, in this study, not all of the traits (or stimuli) were independent. The complex stimuli overlapped with three of the simple stimuli, and the simple ones may have somewhat overlapped, too. Yet the degree of overlap across traits should vary according to the similarity of the stimuli, such as there being more overlap between the first complex stimulus (it including German and Woman as two of its six characteristics) and A GERMAN or A WOMAN than with A DISABLED PERSON. Correlations between BD factors across these concepts bore out this expectation, as well as throughout the rest of the matrix.

There was inconsistency in the matrix, with items correlating in a fashion that would tend to reduce the discriminant validity of the methods. Due to the size of the matrix, though, some inconsistency ought to have been expected, and most of what occurred seemed due to the lack of complete independence

between concepts and BD factors. In general, the less similar were the traits or the more idiosyncratic the factor structures, the less was the overlap.

D. DISCUSSION

Fishbein's (3) proposition that behavioral intentions may be employed as an indirect measure of attitudinal affect, in a manner similar to his treatment of cognition, was not supported by the present data. Only 25 to 30 percent of the correlations between either measure of affect and weighted behavioral intentions scores were significant. Approximately the same percent of correlations between affect and standard (or unweighted) BD scores were significant. Such results argue strongly against Fishbein's proposal, in terms of either convergent or discriminant validity.

There is still another way to consider these correlations—namely, in terms of variance controlled—a procedure, furthermore, that illustrates the non-stringency of the .001 significance level. With 78 *df*, a coefficient only .35 is needed to achieve significance at that level, a correlation that accounts for 12 percent of the common variance. Even when reliability is taken into account and corrections for attenuation are made—although severe criticisms have been made of this procedure (5)—over 80 percent of the crucial correlations still accounted for under 25 percent of the reliable common variance. The largest overall mean correlation controlled 14 percent of the variance, a finding that implies a great lack of equivalence between affect and weighted behavioral intentions.

Equivalence was greatest between the weighted and standard BD scores, correlations ranging from .60 to .88, with an overall mean of .78. According to Fishbein's model (2,3), this level of correlation ought not to exist between the measures. Just as the affect and standard BD scores should be orthogonal, so should the weighted and standard behavioral intentions scores. Uncorrected for attenuation, 61 percent of the variance was common for these measures (increasing to 91 percent when corrected). The two procedures, then, essentially measured the same thing, and this "same thing" was not attitudinal affect. Behavioral intentions as a special subset of cognitions are, indeed, special.

Yet these results have strong implications not only for attitude theory and measurement, but also for such research areas as attitude change and the relationship between attitude and behavior. For instance, in a given study, attitude change may not occur in terms of affect, but behavioral intentions could

well have changed. Conversely, affect may evidence change when behavioral intentions do not. Separate measurement of these components is indicated by the present study.

E. SUMMARY

The relationship between attitudinal affect and behavioral intentions was investigated in terms of the Campbell and Fiske (1) multitrait-multimethod matrix. Involved were measures (a) of the affect (evaluation) toward the attitude objects, (b) of behavioral intentions toward the attitude objects, and (c) of behavioral intentions weighted by the affect associated with the behaviors themselves. Contrary to Fishbein (3), the results indicated that affect toward the attitude object and behavioral intentions weighted by the affect associated with the behaviors were only minimally related; most of the correlations were nonsignificant and accounted for well under 25 percent of the common variance. This was also true for the relationship between standard (or unweighted) behavioral intentions and attitudinal affect. Standard and weighted behavioral intentions scores, though, were highly related.

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5111 Upland Dr.

Rockford, Ill., 61108

DELINQUENCY AND SUSCEPTIBILITY TO SOCIAL INFLUENCE AMONG ADOLESCENTS AS A FUNCTION OF LEVEL OF MORAL DEVELOPMENT*¹

Department of Social Sciences, Clarkson College of Technology

EUGENE M. FODOR

A. INTRODUCTION

The present analysis considered level of moral development as defined by the Kohlberg Interview (2) in relation to two behaviors with which it might be expected, on the basis of Kohlberg's theory (2, 3), to bear a negative relation: namely, delinquency and susceptibility to experimenter efforts to induce change in moral judgment. Kohlberg (2, 3) described six stages in the development of moral thought for which he hypothesized an invariant sequence whereby each stage represented a restructuring and expansion of the stage immediately preceding.

Validation of Kohlberg's schema requires that Moral Judgment scores derived from the Interview correlate with various behaviors in a manner consistent with Kohlberg's theory. Delinquency, we would suppose, would constitute one such behavior. In only one study has that relationship been examined (2), and although the number of subjects was small, a substantially lower Moral Judgment score was found to characterize a group of delinquent 16-year-olds than a group of nondelinquent controls.

Stages 3 and 4 of the Kohlberg schema imply a degree of submissiveness to the social influence of others. The greater the preponderance of principled moral reasoning (Stages 5 and 6) in one's interview protocol, therefore, the less susceptible he should be to various forms of social influence.

The Kohlberg Interview, as Kohlberg originally devised it, contains a number of attempts to dissuade subjects from judgments they have just made. In a previous investigation by the author (1) subjects who consistently resisted dissuasive influence of this sort were found to have significantly higher Moral Judgment scores than subjects who at some point yielded to that influence.

Since the delinquent sample in the present research was not represented in

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the above study, that sample was subjected to the same analysis to determine whether those results could be replicated.

B. METHOD

1. *Subjects*

Two groups of subjects were used in this study. Forty delinquent adolescent males, aged 14-17, comprised the first group and were located through various agencies and institutions of Vermont and northern New York State. All of these boys met the criterion of referral to a court of law for violations ranging from petty larceny to attempted homicide.

An effort was made to match as closely as possible each delinquent contained in the above sample with a nondelinquent subject from the author's accumulated files on the variables of age, race, verbal intelligence, and amount of education received by the mother. Means and standard deviations on these variables were virtually identical for the two groups.

2. *Procedure*

Each subject was given the Kohlberg Interview during which he was presented with nine hypothetical moral dilemmas. Each dilemma confronted the individual with a choice either of acting in accordance with sanctioned authority or of responding to human welfare needs.

The subject was asked to make a choice and then, depending on what choice he made and what kinds of arguments he advanced in support of that choice, he was administered a predetermined set of probes. The purpose of this procedure was to determine the rationale underlying a given choice; the choice itself was of no concern. These interviews were taped and then transcribed, and all statements by the subject were rated by means of Kohlberg's detailed coding forms.

Rating procedure consisted of examining each "thought-content" unit and attempting to fit it to one of the categories in the coding form. A "thought-content" unit refers to all of a subject's utterance which, taken together, seems to express a single moral idea. Raters had no knowledge of whether a given interview protocol was from the delinquent or nondelinquent sample.

The scoring of protocols followed the procedure originally set forth by Kohlberg and involved weighting percentage usage by each stage by the score assigned that stage: i.e., from 0 to 5.

At three points throughout the Kohlberg Interview, Kohlberg built in arguments intended to convince subjects that they should change a moral decision they had just made. For instance, if a subject resolves a hypothetical

moral dilemma by suggesting that a man should steal a very expensive drug to save his dying wife, the Interview presents arguments against stealing the drug. Or, if a subject decides that the captain of a company of soldiers in Korea should order the "troublemaker," rather than the "sick man," to go back and blow up a bridge, thereby commanding the man to risk almost certain death, the Interview offers arguments favoring the captain's sending the "sick man" instead. Regardless of the initial moral choice a subject makes in these situations, the interviewer tries to dissuade him and move him toward the unchosen alternative. Whether the subject does or does not alter his judgment in these instances, however, does not contribute to his Moral Judgment score. This score is affected only by the reasons he gives for changing or maintaining his previous position.

Twenty-six of the delinquents interviewed became swayed by at least one of the dissuasive arguments presented and were accordingly designated as *Yielders*. The remaining 14 delinquents consistently maintained their initial judgments and these were termed *Resisters*.

C. RESULTS AND DISCUSSION

Each of four research assistants rated 10 interview protocols in common. Product moment correlation coefficients were computed as an index of inter-rater reliability and these coefficients ranged from .79 to .86 with a mean of .83.

Delinquents received a mean Moral Judgment score of 162 with an *SD* of 27. The corresponding mean for nondelinquent subjects was 196 with an *SD* of 29. The value of *t* for this difference was 5.43 ($p < .001$, two-tailed test). While both of these scores fell at Stage 3, the delinquent group scored substantially lower within that stage.

Yielders obtained a mean Moral Judgment score of 153 with an *SD* of 27; Resisters a mean of 177 with an *SD* of 29. A figure of 2.40 was computed as the value for *t* ($p < .05$, two-tailed test). Yielders and Resisters closely approximated one another in distribution of age, verbal intelligence, and amount of education received by the mother.

Both of these findings increase our confidence in the validity of the Kohlberg Scale and in its underlying theoretical schema, and the difference between Yielders and Resisters is consistent with the writer's previous research (1).

D. SUMMARY

Forty delinquent and 40 nondelinquent adolescent boys were administered the Kohlberg Interview and their level of moral thought was assessed. De-

linquents, as predicted, received substantially lower Moral Judgment scores (significant at the .001 level) than did nondelinquents.

Delinquents who at some point in the Kohlberg Interview yielded to attempts by the experimenter to dissuade them from moral decisions they had just made received lower Moral Judgment scores (significant at the .05 level) than did delinquents who consistently resisted such influence.

Both of these findings were seen as contributing to the validity of Kohlberg's schema of moral development.

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*Department of Social Sciences
Clarkson College of Technology
Potsdam, New York 13676*

PERSONAL SPACE AS A PREDICTOR OF PERFORMANCE UNDER CLOSE WORKING CONDITIONS*

Vanderbilt University, Texas Christian University, and Fisk University

JAMES R. RAWLS, RONALD E. TREGO, CHARLES N. MCGAFFEY, AND
DONNA J. RAWLS

A. INTRODUCTION

Personal space (PS) has been defined as the area surrounding an individual beyond which the majority of his interactions take place (2). It has been conceptualized as representing a series of fluctuating concentric globes immediately surrounding and moving about with the individual (2, 3). PS appears to represent a threshold of acceptable distance between two or more individuals.

The two experiments reported here were undertaken to determine whether or not PS measures could be used to predict impairment of performance on certain tasks in relation to the degree of closeness under which the tasks were performed. More specifically, persons desiring greater distance between themselves and others (high PS scorers) were compared with persons requiring less distance between themselves and others (low PS scorers) as to their performance on psychomotor and arithmetic tasks under different degrees of closeness.

B. EXPERIMENT 1

1. Method

a. Subjects. Ss were 56 white male undergraduate students at Texas Christian University, the majority of whom were juniors and seniors. Ss were volunteers recruited from various campus groups and ranged in age from 19 to 34, with a mean age of 24.

b. Performance measures.

1) *PS measure.* A field test was employed as the measure of PS. This measure involved recording the actual distance that S approached another person. Observations were recorded in a hallway which measured 20' in length and 5' in width. Since the hall floor was covered with 9" rubber tiles, the distance between S and the object person (OP) was readily gauged.

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A 25-year-old white male college student served as the *OP*. The same *OP* was used throughout for all *Ss*.

The *OP* stood at one end of the hall, and *S* stood at the other end. *E* instructed *S* to "Walk toward John until you reach a distance that you would feel comfortable in engaging him in social interaction, for example, to carry on a conversation. Stop when you are close enough to him." *E* then stepped back to one side of *OP*, out of *S*'s view. *S* made four approaches: (a) to the front of *OP* (face to face), (b) to *OP*'s left, (c) to *OP*'s right, and (d) to *OP*'s rear. *E* recorded the distance from the toes of *S* to the feet of *OP*.

2) *Psychomotor tasks*. *Ss* were tested on three different psychomotor tasks taken from Moran's Repetitive Psychological Measures.¹ The tasks involved were eye-hand coordination (putting pencil dots in small circles), flexibility of closure (reproducing figures on dotted lines), and visualization (following a numbered line with the eye to its proper cell). Three equivalent forms were used for each test, a different form for each of three conditions of closeness.

Instruments were pretested to ascertain the mean time required for completing each of the tasks. Time limits were then set to assure that only the most proficient *Ss* would be able to complete the tests in the allotted time. The tests were timed as follows: eye-hand coordination, one minute; flexibility of closure, three minutes; and visualization, three minutes.

c. *Procedure*. *Ss* were tested under three conditions of closeness. That is, two, four, and eight *Ss* were tested while seated around a 2.5' \times 5' table. All *Ss* performed all three tasks under all three conditions, having been randomly assigned to a given condition. *Ss* were tested in a small room deliberately made to look cramped and crowded.

When two *Ss* were tested, they were always seated at opposite ends of the table. Under the four-*S* condition, one *S* was seated at each end, and one on each side of the table. Under the eight-*S* condition, one *S* was seated at each end, and three were seated on each side.

Ss were ranked according to their scores on the PS measure, and the distribution was dichotomized so as to compare the performance on the psychomotor tasks of high and low PS scorers. Approach distances for low PS scorers ranged from 3" to 4.20', with a mean of 2.24'. The range for high PS scorers was 4.20' to 18', with an average of 8.20'. Each *S*'s performance under the eight-*S* and four-*S* conditions was compared to his performance under the two-*S* condition so as to assess the effects of crowding.

¹ Repetitive Psychological Measures. Louis J. Moran, Department of Psychology, University of Texas, Austin, Texas.

2. Results

Sign tests indicated that the overall performance on the combined psychomotor tasks of high PS scorers tended to decrease as the degree of closeness increased ($p < .10$). In contrast, overall performance of low PS scorers was not significantly affected by crowding conditions (see Table 1). High PS scorers' performance on the eye-hand coordination task deteriorated under the four-S condition ($p < .05$), and when compared to the two-S condition, the eight-S condition showed a further decrease in performance ($p < .002$). No significant differences were found for low PS scorers on the eye-hand coordination test. On the flexibility of closure task, low PS scorers' performance decreased under the four-S condition ($p < .001$) and then increased under the eight-S condition ($p < .001$), showing no significant difference overall. On the other hand, high PS scorers showed an overall decrease on the flexibility of closure task ($p < .10$). The only significant difference on the visualization task was an increase in performance for the low PS scorers between the four-S and the eight-S condition ($p < .01$).

TABLE 1
MEAN DIFFERENCES AND SIGN TEST SIGNIFICANCE LEVELS FOR
HIGH AND LOW PS SCORERS

Task	2S-4S		4S-8S		2S-8S	
Eye-hand coordination						
High	-6.40	$p < .05$	-2.81	NS	-9.21	$p < .002$
Low	.70	NS	-3.90	NS	-3.20	NS
Flexibility of closure						
High	-1.00	NS	-2.14	NS	-3.14	$p < .10$
Low	-3.72	$p < .001$	2.86	$p < .001$	-.86	NS
Visualization						
High	-3.96	NS	-.11	NS	-4.07	$p < .10$
Low	-2.75	NS	2.96	$p < .01$.21	NS
Combined tasks						
High	-11.36	NS	-5.06	NS	-16.42	$p < .10$
Low	-5.77	NS	-.15	NS	-5.92	NS

C. EXPERIMENT 2

1. Method

a. *Subjects.* Ss were 48 male white juniors, seniors, and graduate students at Texas Christian University. Ss were solicited from various campus groups and were paid \$3.00 each for their participation in the experiment. Ss ranged in age from 19 to 38, with a mean age of 25.

b. Performance Measures.

1) *PS Measure.* The same field test that was employed in Experiment 1 was used as the measure of PS.

2) *Arithmetic task.* An arithmetic task was employed as the criterion measure. The task entailed both addition and subtraction of two columns of figures. The number facility task (rapid addition) in Moran's Psychological Repetitive Measures was modified for use in the study. The revised task involved adding the first two of three rows of numbers and then subtracting the third from the sum of the first two.

Pretesting was carried out in order to ascertain the mean time required for completing a single form of the test. On this basis, the time limit was set at 40 minutes to complete 240 problems from three forms, so as to assure that only the most proficient would be able to complete the test in the allotted time. Forms one, two, and three were used for one test condition, while forms four, five, and six were used for the other.

c. Procedure. Ss were tested under two conditions of closeness. That is, two and eight Ss were tested while seated around a 2.5' \times 5' table. Ss were scheduled so that half (24 Ss) took the test under the two-S condition first, while the other half (24 Ss) took the two-S condition upon completion of the eight-S condition. All Ss were tested in a room measuring 7' in height, 9' in width, and 10' in length.

Ss were ranked according to their scores on the PS measure, and the distribution was dichotomized in order to compare the performance on the arithmetic task of high and low PS scorers. Approach distance for low scorers ranged from 6.3" to 1' 5.7". The range for high PS scorers was 1' 8.7" to 7' 8.7", with an average of 3' 8.76".

2. Results

The data were initially analyzed by two-way classification repeated measures analyses of variance. The analysis of the number of problems completed indicated that high scorers on the PS measure worked significantly more problems than did low scorers ($p < .05$). The data also indicated that the number of problems worked under the eight-S condition was significantly greater than under the two-S condition ($p < .05$). Inspection of the means in Table 2 indicates that the performance of low PS scorers was markedly superior under the eight-S condition, while the number of problems completed by high PS scorers was relatively unchanged under the two conditions.

The analysis of the number of problems worked correctly showed that high PS scorers had significantly more correct answers than did low scorers ($p <$

TABLE 2
MEANS FOR PROBLEMS COMPLETED AND WORKED CORRECTLY

Scorers	Two-S condition	Eight-S condition
<i>Problems completed</i>		
High Ps	204.00	205.00
Low PS	167.00	182.00
<i>Problems worked correctly</i>		
High Ps	181.00	178.00
Low PS	144.00	156.00

.05). However, high and low scorers' performance differed under the two-S and eight-S conditions ($p < .05$). Inspection of the means in Table 2 indicates that low scorers on the PS measure worked more problems correctly under the eight-S condition than under the two-S condition. On the other hand, high PS scorers worked more problems correctly under the two-S condition than under the eight-S condition.

Two additional analyses were undertaken on a group of 12 high PS scorers and a group of 12 low PS scorers who were matched according to the number of problems they were able to complete under the two-S condition. By means of t tests, their performance was compared under the eight-S condition.

When equated as to the number of problems worked under the two-S condition, low PS scorers worked more problems under the eight-S condition than did high scorers ($t = 1.07$, $p < .10$). Low PS scorers also worked more problems correctly than did high scorers ($t = 1.43$, $p < .10$). Means for problems completed and problems worked correctly are shown in Table 3.

TABLE 3
MEANS FOR Ss MATCHED AS TO N PROBLEMS COMPLETED
UNDER TWO-S CONDITION

Scorers	Two-S condition	Eight-S condition
<i>Problems completed</i>		
High PS	194.25	198.50
Low PS	194.24	207.41
<i>Problems worked correctly</i>		
High PS	170.75	169.95
Low PS	171.58	182.58

D. DISCUSSION

It has been hypothesized that the performance of high PS scorers would deteriorate under conditions of increased closeness, while the performance of low scorers would be unaffected. This hypothesis was only partially supported.

In Experiment 1, sign tests indicated that the performance of high PS scorers did tend to decrease as the degree of closeness increased. On the other hand, the performance of the low scoring group was relatively unchanged by the conditions of closeness.

Results from Experiment 2 indicated that Ss in the upper half of the PS distribution worked more arithmetic problems and got more correct answers than did Ss in the lower half of the PS distribution, regardless of the conditions of closeness. This finding was not anticipated, partly because Ss in both groups had such similar educational backgrounds, and partly because in Experiment 1, no such differences in performance were apparent between high and low PS scorers on the three psychomotor tasks. Upon inspection of the distributions of the two groups, it was discovered that the higher mean scores obtained by those in the upper half of the PS distribution could be accounted for largely by several extremely high scores which were absent among the scores of Ss in the lower half of the PS distribution.

Ss, in general, worked more problems under the eight-S condition than under the two-S condition. However, inspection of the means indicates that this is largely attributable to the increase in the number of problems worked under the eight-S condition by the low scorers on the PS measure, rather than an overall increase for both groups. The mean for high PS scorers increased by only one point, whereas the mean for low PS scorers was 15 points higher under the eight-S condition than under the two-S condition.

Inspection of the means also indicates that high PS scorers worked more problems correctly under the two-S condition than the eight-S condition. On the other hand, low PS scorers worked more problems correctly under the eight-S condition than they did under the two-S condition.

The higher number of arithmetic problems worked by both groups under the eight-S condition is reminiscent of the early social facilitation experiments (1). However, performance of low scorers on the PS measure appeared to be much more enhanced by being in the larger group. For low PS scorers, the same facilitative effect held with regard to the number of problems worked correctly. High PS scorers, on the other hand, showed a decrease in the number of correct answers. This increase in the number of errors on the part of high PS scorers probably can be attributed to an increase in stress resulting from the close conditions.

Due to the overall mathematical superiority of the high PS Ss, two additional analyses were undertaken on a group of 12 high PS scorers and a group of 12 low PS scorers who were matched according to the number of problems they completed under the two-S condition. Their performance was then com-

pared under the eight-S condition with regard to the number of problems completed and the number of problems worked correctly. When mathematical ability of high and low PS Ss was equated in this manner, low PS Ss completed more problems and worked more problems correctly than did high scorers. Both groups completed more problems under the eight-S condition than under the two-S condition. Again, the increase was much greater for low PS scorers (13.26 points) than for high PS scorers (4.25 points). With respect to the number of problems worked correctly, low PS scorers' performance was better (11 points) under the eight-S condition than under the two-S condition. On the other hand, high scorers on the PS measure worked about the same number of problems correctly under the two conditions.

Together, the results of Experiments 1 and 2 lend some support to the hypothesis that Ss high in PS are more likely to incur a larger decrement in performance under the stress of crowded conditions than are low PS scorers. Consequently, the use of PS measures may be helpful in the selection of persons who must perform efficiently under such conditions: e.g., in submarines and spacecraft. Granted equal ability, the elimination of Ss scoring at the upper extremity of the PS distribution may result in an increase in level of performance of groups who must operate in close quarters.

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*Graduate School of Management
Vanderbilt University
2505 West End Avenue
Nashville, Tennessee 37203*



FEAR, ANXIETY, AND AFFILIATION FOLLOWING A ROLE-PLAYED ACCIDENT*

The University of Michigan and The University of Texas at Austin

JAMES M. DABBS, JR.,¹ AND ROBERT L. HELMREICH²

A. INTRODUCTION

A number of experiments have qualified Schachter's finding (11) that fear increases affiliation, and that the increase is most marked among firstborn individuals. Sarnoff and Zimbardo (10) found that while simple fear increased affiliation, *anxiety* regarding repressed or socially unacceptable impulses led to a decrease in affiliation. Helmreich and Collins (5) and Wheaton and Helmreich (12) found no birth order differences in affiliation when subjects are working, rather than waiting, under conditions of fear. And Wheaton and Helmreich (12) found greater affiliation under fear when subjects had waited with others prior to the experiment.

Fear in experiments such as these is usually manipulated by presenting subjects with the threat of electric shock; affiliative tendencies are then assessed before the subject receives any shock. Greenberg (4) modified the procedure to one of "role playing," in which subjects pretended they would receive a shock although they knew no shock was involved. He found that subjects who reported being more "afraid" of the imagined shock also expressed more desire to affiliate, and that this tendency in turn was more marked among first-born subjects. Such role playing techniques are appealing because they have the potential dual advantages of being easy to carry out and of avoiding the ethical problems of deception (6).³

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¹ Now at Georgia State University.

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³ It is not clear just what status role playing should have as a research technique, although it has, in fact, been widely used in social psychology under other names. For example, "risk taking" is studied with the use of poker chips or inconsequential amounts of money, cooperation and conflict are studied with the use of the prisoner's dilemma and trucking games, cognitive balance is studied with imagined situations (9), hypnosis is used to induce arousal (1) or boredom (3), and, in general, the experimental subject is regarded as behaving according to rules quite different from the rules in his everyday life (8). We do not know how much weight should be attached to role-playing results; the problem is discussed further by Levinger and Moreland (7) and by Willis and Willis (13). Certainly at a time when there is

The present study extended role playing to a situation quite different from that used in the earlier fear-affiliation experiments. Subjects were Army helicopter pilots, and fear was manipulated by having them imagine a helicopter crash. The results of this experiment suggested that the Sarnoff and Zimbardo (10) distinction between fear and anxiety might be relevant, and a second experiment was set up to manipulate fear and anxiety independently of one another.

B. HELICOPTER ACCIDENT EXPERIMENT

1. Method

Three hundred four U. S. Army student helicopter pilots completed a prequestionnaire and read a script describing a low, medium, or highly dangerous accident. Each pilot imagined the accident happening to himself and described his feelings on a postquestionnaire. All materials were stapled together into a single booklet for each subject. All subjects were run together in a single session in an auditorium. The entire population had completed questionnaires over the preceding months as part of a study of predictors of success in flight training, and the present materials were presented as being somehow related to that study. Six subjects were dropped because of incomplete questionnaires or errors in coding, leaving a final *N* of 298. Most subjects were recent high school graduates who had joined the Army to become helicopter pilots. They had completed four months of flight training and were competent but relatively inexperienced pilots. They were quite cognizant of the potential dangers of flying; 38% reported having been involved in an accident or near accident during training.

The accident script was prefaced by a statement explaining that it was part of an experiment and that subjects would be asked to pretend being involved in an emergency while flying. Subjects were asked to think back over their own experiences and imagine the accident happening to themselves.

Each accident script, about 300 words long, described a pilot flying alone in a helicopter on a cross-country flight. After about 20 minutes of flying the aircraft developed a sudden power failure. The *low danger* accident occurred in the daytime over open terrain. It was the kind of emergency each subject had practiced for many times. The pilot followed standard procedures and landed safely in a field. The *medium danger* accident occurred in the daytime over wooded terrain. The pilot controlled his descent but could not land

increasing pressure on social psychology to obtain useful findings, and to do so while being fair to the experimental subjects, it would seem unwise to dismiss role playing as prescientific guesswork, as is sometimes done (2).

safely. He crashed into the trees, and his aircraft was destroyed, but he escaped unhurt. The *high danger* accident occurred at night over wooded terrain. The pilot controlled his descent but could not judge his altitude. He hit the trees going too fast, and his aircraft broke apart. He escaped just as it burst into flame and exploded. After each of the accidents the pilot waited near his downed aircraft for help to arrive.

Subjects completed the postquestionnaire while still in the role of having just had the accident. Moods were assessed in the questionnaire with a 24-item adjective checklist, responses to each item being marked on a seven-point scale. Desire to affiliate was assessed with six items which asked whether subjects would like to be with someone else after the accident, after returning to their quarters, and before reporting to a board of investigation. For each of the three times subjects were asked separately whether they would like being with someone who had had a similar experience and with someone who had not had a similar experience. Subjects answered each of the six questions by marking a seven-point scale ranging from "like to be alone" through "makes no difference" to "like to be with him."

Two questions relevant to affiliation were included on the prequestionnaire. Subjects were asked whether they usually preferred being with other people or being alone, and whether they preferred being with someone else or being alone when anxious or worried. These questions were answered on rating scales similar to those in the other affiliation questions.

2. Results and Discussion

A factor analysis of the mood scores revealed three orthogonal factors accounting for 59% of the variance in the mood scores. The mean of four adjectives loading most heavily on each factor was computed, providing overall mood scores for Arousal (active, lively, energetic, vigorous), Fear (terrified, alarmed, frightened, insecure), and Well-being (happy, pleased, good, overjoyed). The mood data were analyzed with 3×2 analyses of variance combining accident danger (low, medium, high) with birth order (firstborn and only, later born). The differences among accident conditions were significant for each of the moods ($p < .05$). Mood scores in low, medium, and high danger accident conditions were, respectively, \bar{X} Arousal = 4.5, 3.9, 4.1; \bar{X} Fear = 2.0, 2.8, 2.8; and \bar{X} Well-being = 5.2, 4.0, 3.6 (higher scores equal more of each of the respective moods). The only significant effect of birth order was not readily explainable interaction ($p < .05$), reflecting unusually low fear among firstborn subjects in the low danger condition.

An examination of the means for the six affiliating items revealed no birth

order effects. Since each subject responded to all the affiliation items, which were phrased similarly and had identical response alternatives, the items were analyzed together with a repeated measures analysis of variance. Accident Danger (low, medium, high) was a between-subjects factor and Time (after accident, in quarters, before board) and Object of Affiliation (similar person, dissimilar person) were within-subjects factors. Birth order was ignored and seven subjects dropped to equalize n 's. This analysis is summarized in Figure 1 and Table 1.

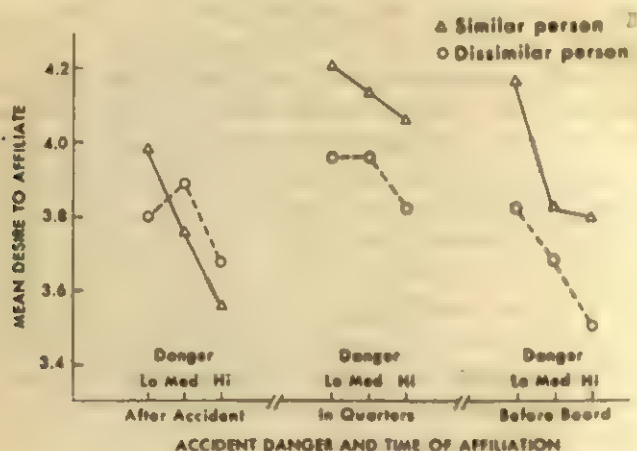


FIGURE 1
DESIRE TO AFFILIATE IN HELICOPTER ACCIDENT STUDY

TABLE 1
ANALYSIS OF VARIANCE OF DESIRE TO AFFILIATE IN HELICOPTER ACCIDENT STUDY

Source	df	MS	F
Between subjects			
Accident Danger (A)	2	9.31	2.69
A linear	1	18.62	5.38*
Error between	288	3.46	
Within subjects			
Time of Affiliation (T)	2	10.74	12.34**
A × T	4	.34	<1.0
S × T (A)	576	.37	
Object of Affiliation (O)	1	9.83	14.83**
A × O	2	1.38	2.07
S × O (A)	288	.66	
T × O	2	3.33	9.42**
A × T × O	4	.35	<1.0
S × T × O (A)	576	.36	

* $p < .05$.

** $p < .001$.

Reported desire to affiliate decreased with increasing danger, an effect opposite to that usually found in studies of fear and affiliation. In addition, there was greater desire to affiliate with a similar than with a dissimilar person, and desire to affiliate was greater in quarters than after the accident or before the board. The Time \times Object interaction reflects the fact that subjects did not prefer similar over dissimilar affiliation partners immediately after the accident; perhaps in the confusion following an accident people simply do not discriminate as well.

Subjects across all conditions tended *not* to affiliate; mean affiliation in Figure 1 is below the midpoint (4.0) of the affiliation scale. This is especially noteworthy, since subjects were run in a large group, a procedure that has increased affiliation (12).

On the prequestionnaire items dealing with characteristic affiliation, subjects indicated that their usual desire to affiliate was greater than their desire to affiliate when anxious ($X = 5.1$ vs 3.7 ; $t = 13.02$, $df = 296$, $p < .001$).

The accident affiliation results were unexpected, but the setting is quite different from that of most fear-affiliation experiments. When the subject expects to receive a shock in a psychological experiment no particular performance or skill is usually required of him, and his attention is focused upon what will happen to him. The pilot who has been involved in an accident has a different set of concerns. He has been an active participant, and the outcome of the accident may have been at least partly his fault. He may feel that his performance has been inadequate, or that he has failed. Feelings of failure in a person who wants very much to perform well should evoke anxiety, or fear associated with feelings he does not wish to acknowledge. In addition to feeling more anxiety than a subject in a shock experiment, the Army pilot may also be uniquely disturbed by feelings of anxiety, since anxiety does not fit his image of a dashing aviator.

This interpretation assumes that the dominant feeling aroused by the accidents was anxiety, rather than fear, and that the anxiety operated as in the Sarnoff and Zimbardo experiment to decrease affiliation. These results are unsatisfying, however, since they were obtained in a novel and untested procedure. A second experiment involving role-played automobile accidents was therefore set up, in which fear and anxiety would be manipulated independently of one another. The main purpose of the second experiment was to reproduce the features that seemed important in the helicopter accident situation, and to see whether anxiety would decrease affiliation while fear increased it.

C. AUTOMOBILE ACCIDENT EXPERIMENT

1. *Method*

Subjects were 73 male and 84 female University of Michigan students from an introductory psychology subject pool. Each subject completed a pre-questionnaire, read a 400-word description of an automobile accident and imagined it happening to himself, and completed a postquestionnaire. Subjects were run in groups of about 30 each. Forty-one percent of the subjects reported having been in some kind of automobile accident while driving.

Four different automobile accident scripts were used to manipulate fear and anxiety independently of one another. Fear was manipulated by varying the danger of the accident. Two of the accidents involved low danger, in which a sudden difficulty in steering forced the driver to pull off the road and stop. The other two accidents involved high danger, in which a more extreme steering difficulty caused the driver to lose control of the automobile, run off the road, and collide with a tree. A fuel line was ruptured in the collision, and the automobile burst into flames as the driver got out. Low and high danger accidents defined the *low* and *high fear* conditions.

Anxiety was expected to depend more on the subject's perception of his performance than on the objective danger associated with the accident. A subject should feel more anxious if he has failed in his performance and is to blame for what has happened. The low and high danger accidents were therefore divided into ones that would produce low or high anxiety. In the *low anxiety* accidents the driver was highly experienced and driving his own car. In the *high anxiety* accidents he was relatively inexperienced and driving a borrowed car. The high anxiety condition was intended to approximate the situation with the helicopter pilots, each of whom was inexperienced and flying a helicopter that was government property.

After reading the script and while still in the role of having just had an accident, subjects completed the postquestionnaire. One item asked whether subjects would prefer waiting alone or with someone else for help to arrive (on a seven-point scale from "prefer alone" to "makes no difference" to "prefer someone else"). Other items assessed subjects' moods following the accident, including the extent to which subjects felt "anxious or worried" and "just plain scared."

Affiliation was expected to increase with the fear manipulation and decrease with the anxiety manipulation. The effect would be consistent with the earlier Schachter findings. The anxiety effect would be consistent with the

Sarnoff and Zimbardo findings and with our interpretation of the helicopter results.

Three items were included on the prequestionnaire to assess subjects' characteristic affiliative tendencies. These items asked whether subjects usually preferred being with someone else, whether they preferred being with someone else when anxious or worried, and whether they preferred being with someone else when just plain scared. Subjects marked seven-point scales after each question to indicate whether they preferred being alone, did not care, or preferred being with someone else under these conditions.

2. Results

The data were analyzed with three-way unweighted means analyses of variance combining low-high fear, low-high anxiety, and male-female subjects. (An examination of the data revealed no birth-order effects.) Postquestionnaire responses indicated that feeling "anxious or worried" increased both from low to high fear conditions ($F = 16.32$, $df = 1/149$, $p < .001$) and from low to high anxiety conditions ($F = 15.27$, $df = 1/149$, $p < .001$). Feeling "just plain scared" increased from low to high fear conditions ($F = 95.49$, $df = 1/149$, $p < .001$), but was not at all affected by the anxiety manipulation ($F < 1.0$). There was also a sex difference, with females more anxious or worried ($F = 16.70$, $df = 1/149$, $p < .001$) and more just plain scared ($F = 41.03$, $df = 1/149$, $p < .001$) than males.

Desire to affiliate was not affected by either the fear or the anxiety manipulation. Sex did produce a significant difference, with females reporting greater desire to affiliate than males ($F = 16.17$, $df = 1/147$, $p < .001$).

Responses to the three prequestionnaire affiliation items were analyzed with a repeated measures analysis of variance, with Sex a between-subjects factor and Kind of Affiliation (usual, anxiety, fear) a within-subjects factor. Three subjects with missing data were dropped, and 14 female subjects (the last female subjects run) were dropped to equalize n 's. The results are summarized in Table 2.

TABLE 2
MEAN CHARACTERISTIC AFFILIATION UNDER DIFFERENT CONDITIONS
REPORTED BY COLLEGE STUDENTS

Sex	Usual	Kind of affiliation	
		Anxiety	Fear
Males	5.3	4.3	5.2
Females	5.0	5.2	6.3

Note: Higher scores indicate greater affiliation.

Responses to the three affiliation questions differed ($F = 20.91$, $df = 2/276$, $p < .001$), and the pattern of responses in turn differed markedly between males and females ($F_{\text{interaction}} = 12.08$, $df = 2/276$, $p < .001$). Females reported affiliating more than males under both fear and anxiety ($F = 6.87$, $df = 1/138$, $p < .05$). Relative to their level of usual-affiliation, males were notable in their decrease to anxiety-affiliation. Both males and females showed higher fear-affiliation than anxiety-affiliation. The validity of these differences is somewhat questionable, since a subject might interpret "anxious or worried" as referring to merely a lesser level of fear than "just plain scared." But it seems likely that the two states are qualitatively different, since males indicated that one of them caused a decrease below usual-affiliation and the other an increase above usual-affiliation.

D. DISCUSSION

The automobile experiment did not provide direct support for the interpretation of the helicopter experiment, since the automobile accidents produced no differences in affiliation. The two experiments were quite different, in that a helicopter crash involves dramatic failure where performance is highly valued and is likely to produce both more anxiety and more fear than an automobile crash. But perhaps more importantly, the subject populations were different. Army pilots are oriented toward action, not toward exploring and understanding their feelings. The same amount of anxiety might be more disturbing and less acceptable to pilots than to college students, leading to more social withdrawal among the pilots.

Data relevant to this hypothesis of a difference between subject populations come from the prequestionnaire items in the two experiments dealing with characteristic affiliative tendencies. The questions asking whether subjects usually preferred being with someone and whether they preferred being with someone when anxious or worried were phrased almost identically in the two experiments, and responses were compared for the male college students and the pilots with an unweighted means repeated measures analysis of variance. The findings are summarized in Table 3.

Both groups reported usual-affiliation higher than anxiety affiliation ($F = 103.40$, $df = 1/365$, $p < .001$), and overall affiliation was higher among the students than among the pilots ($F = 4.92$, $df = 1/365$, $p < .01$). But the interaction between group and kind of affiliation reflected more decrease from usual-to anxiety-affiliation for pilots than for students ($F = 3.69$, $df = 1/365$, $p < .06$), suggesting that anxiety was especially distressing to the pilots. More importantly, the pilots' anxiety-affiliation score was below the mid-point (4.0) of the affiliation scale. Male college students placed themselves on the "affilia-

TABLE 3
MEAN CHARACTERISTIC AFFILIATION UNDER DIFFERENT CONDITIONS
REPORTED BY MALE COLLEGE STUDENTS AND PILOTS

Group	Kind of affiliation	
	Usual	Anxiety
Male college students	5.3	4.3
Helicopter pilots	5.1	3.7

Note: Higher scores indicate greater affiliation.

tion" side of the scale when anxious, while pilots moved across to the "disaffiliation" side.

Sarnoff and Zimbardo contrasted anxiety with fear, but the present findings point up the importance of the kind of person it is who feels anxious. Army pilots reported a decrease in affiliation when anxious or worried, and presumably their decreased affiliation after an accident resulted from this tendency. Male college students reported a decrease in affiliation when anxious or worried, but to lesser degree than the pilots. And female college students reported an *increase* in affiliation when anxious or worried. These subject groups may differ in a kind of "toughness," or desire to reject or conceal socially unacceptable feelings, with "toughness" increasing from female students to male students to Army pilots. Sarnoff and Zimbardo found affiliation decreasing with anxiety for a population of male college students. The present findings suggest that in their experiment affiliation might have decreased less for a population of female college students and decreased more for a population of Army pilots. It seems likely that the pilots are more concerned with the "image" they transmit when affiliating. Affiliation can bring a variety of benefits, such as providing help, reducing anxiety, or bolstering courage. But it also makes public certain information about oneself and one's feelings and subjects differ in their willingness to expose themselves in this manner.

E. SUMMARY

Subjects in two experiments role played accidents and reported on their desire to affiliate. Army helicopter pilots reported less desire to affiliate following a helicopter crash of greater severity. College students reported no differences in desire to affiliate following automobile accidents of varying severity. The results were interpreted in terms of the anxiety (as opposed to fear) associated with a helicopter crash and the unacceptable nature of anxiety to a pilot. Other data indicated that male pilots decreased in affiliation when anxious, male college students decreased but to a lesser degree, and female college students increased in affiliation.

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Department of Psychology
Georgia State University
Atlanta, Georgia 30303

Department of Psychology
University of Texas at Austin
Austin, Texas 78712

SOME EFFECTS OF DRESS CUES ON OBSERVATIONAL ACCURACY, A PERCEPTUAL ESTIMATE, AND IMPRESSION FORMATION*

University of Waikato, Hamilton, New Zealand

PAUL N. HAMID

A. INTRODUCTION

Impressions formed and judgements made of others are based on such cues as facial expression, gestures, manner, physique, and dress. Yet, when a review of the literature has been made, it becomes particularly noticeable that no class of cues has been more neglected than those under the head of "style of dress." It seems rather odd that such cues have been ignored, since their very nature enables direct manipulation under the control of the experimenter. There has always been a problem to classify and manipulate cues, such as facial expressions, because of their spontaneous character in a social situation and the inability of expert judges to reach consensus in their classification. Accuracy in person perception has been dogged with methodological and response bias problems resulting in an extremely marked decline of studies in this area. Dress, however, affords a class of stimuli that can be measured along physical dimensions such as color and size, and clothes also represent stimuli with a purely social referent. Accuracy of judgements and the relative effects of cues on these judgements could be carried out with relative ease. Observational accuracy may also provide valuable data for the determinants of person perception in general.

Membership groups, status, role, etc., all involve certain expected behaviors, to a large extent, represented in symbolic form by the clothes a person wears (16). It is quite obvious that, during socialization, the child learns to attach cue values to what a person wears. He can identify a fireman, policeman, and a soldier long before he is able to make inferences between personality traits in others. He can distinguish between males and females often before he knows any physiological differences. Dress, therefore, provides an extremely reliable cue for role differentiation and later for personality typing.

The extremely persuasive influence of dress in the judgements made of students was illustrated in a study by Hamid (4) in which, for example, it

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was found that subjects who attributed unfavorable traits to students tended to have very little contact with students and saw students as typically with a beard, wearing jeans, and generally of unkempt appearance. Hamid (5) found a marked stereotype response by subjects in ranking photographs of females in different modes of dress, it being evident that the stereotypes were strongly influenced by such cues as whether the stimulus person wore glasses and makeup. Specific cues, therefore, appear to influence the resulting stereotypes. This is to be expected, since fashion trends provide guidelines for improved status and increased self-esteem. McKeachie (10) has shown the degree to which a single dress cue (lipstick) can determine the impressions formed.

The present study was designed to investigate the effect of manipulated dress variables on resulting judgements. Besides the usual trait ratings obtained in impression formation studies, the effect of dress on observational accuracy was also explored. It was predicted that manipulation of makeup and glasses would have a significant effect on (a) the observational accuracy of the subjects: more specifically, that female judges would be significantly more accurate in their observation than male judges. Previous studies that have been made of sex differences in observational accuracy have given the honors to female observers (8, 15). This superiority in observational accuracy could be due to greater cue dependency (9). If this is so, we would expect stereotype scores to be depressed when accuracy is high. It was also predicted that the manipulated dress cues would (b) significantly effect a perceptual estimate: namely, the distance of hemlines above the knee. With the advent of the miniskirt on the fashion scene, attention has been focussed on women's fashion. The introduction of the so-called "psychedelic" colors of women's dress material has only served to strengthen this tendency. Such specific cues are more likely to be salient in perceptual judgements based on dress. Accordingly, it was predicted that estimates of hemlines above the knee would be markedly affected by dress style. (c) Byrne, London, and Reeves (2) found that physical attractiveness influenced interpersonal attraction of both sexes towards strangers of either sex both in an information and in a noninformation condition. Walster, Aronson, Abrahams, and Rottman (13) found an even stronger relationship when the individual's personal judgements of attractiveness were involved. Attractiveness relationships are, in part, a result of initial physical impressions and the extent which specific phenotypic variables are involved is an important problem. Previously, Hout (7) found when college males rated male strangers, attractiveness was positively related to ratings of clothing worn. Thus it was hypothesized that physical attractiveness is a function of style of dress and that such a relationship is more extreme in opposite sex

interaction. Finally, (d) it was predicted that dress style would significantly affect the resulting impression.

B. METHOD

1. Subjects

There were 52 subjects (26 male, 26 female) who constituted one practical class (i.e., teaching and conducting of experiments) of an introductory course in psychology at Victoria University of Wellington. The experiment was carried out during class sessions.

2. Social Objects

Four female students unknown to the subjects (not enrolled in a psychology course) were asked to participate as social objects acting as the experimenter's helper for one hour of a normal two-hour class session. They were selected with the restrictions that they were approximately the same height (5 feet, 6 inches) and same body build (34-26-36).

3. Independent Variables

Two variables were manipulated: makeup and whether the girl wore glasses or not. In the makeup condition a girl wore becoming makeup of lipstick, powder, eyeshadow coloring, and hair coiffured. In the no makeup condition the girl wore no makeup whatsoever and had her hair brushed straight.

There were four conditions, one for each stimulus person: makeup with and without glasses and no makeup with and without glasses. All girls wore close-fitting dresses having hemlines seven inches above the knee, in keeping with modern fashion.

4. Dependent Variable Measures

An observation test was prepared to obtain the accuracy in observing the stimulus objects. This consisted of 15 items asking the subjects to record what they thought each girl had worn. Answers were recorded in yes/no form or, for example, by naming the color of the dress worn. One further item in the questionnaire asked for the subject's judgement of the height in inches of the hemline above the knee by the use of a 10 point scale from 0 to 9 inches.

A list of 25 trait adjectives was prepared on the basis of data obtained from a number of studies in impression formation and a pilot study conducted with 232 students in an introductory psychology course in which they were asked to state the adjectives most used to describe the behavior and personality of others.

The 25 traits were prepared in the form of seven-point graphic rating scales: e.g., serious —:—:—:—:—:—:—: not serious. Position, order, and polarity of the scales were systematically varied.

5. Procedure

Each stimulus person attended one of four two-hourly practical class sessions. They were instructed to help the experimenter in handing out mimeographed material, but not to communicate with any class members. The subjects were not told that they would be required to make judgements and expected normal class activity. In order that the procedure be legitimized and suspicion in further sessions minimized, four other students acted as the experimenter's helper in other weekly practical class sessions.

The subjects were asked to fill out the observation test, rate the helper on the 25 traits and record what they thought had influenced their judgements. This was carried out 10 minutes after the helper had left the class at the end of the first hour.

The procedure was conducted on the first, third, fifth, and eighth consecutive week with 4 legitimate helpers attending the intervening practical sessions.

6. Analysis of Results

To investigate the situational effects on the accuracy scores, hemline estimates, and attractiveness ratings, an analysis of variance was performed on each with two levels of sex, two levels of makeup, and two levels of glasses with repeated measures on the last two factors (14).

C. RESULTS AND DISCUSSION

1. Effects of Dress on Observational Accuracy

Figure 1 presents the mean observational accuracy scores under the four dress conditions.

The main effect of Sex was highly significant ($F = 45.87$, df 1/50, $p < .001$). Observational accuracy scores were higher for females than for males.

A significant Makeup \times glasses ($F = 107.23$, df 1/50, $p < .001$) indicated an overall tendency for accuracy scores to be highest for stimulus persons wearing glasses and lowest for stimulus persons wearing makeup. A significant Sex \times Makeup \times Glasses interaction ($F = 23.48$, df 1/50, $p < .001$) indicated that the accuracy scores, though higher for females, did not vary markedly over the dress conditions, while male accuracy scores were more extreme in their upper and lower limits across conditions. Figure 1 shows that

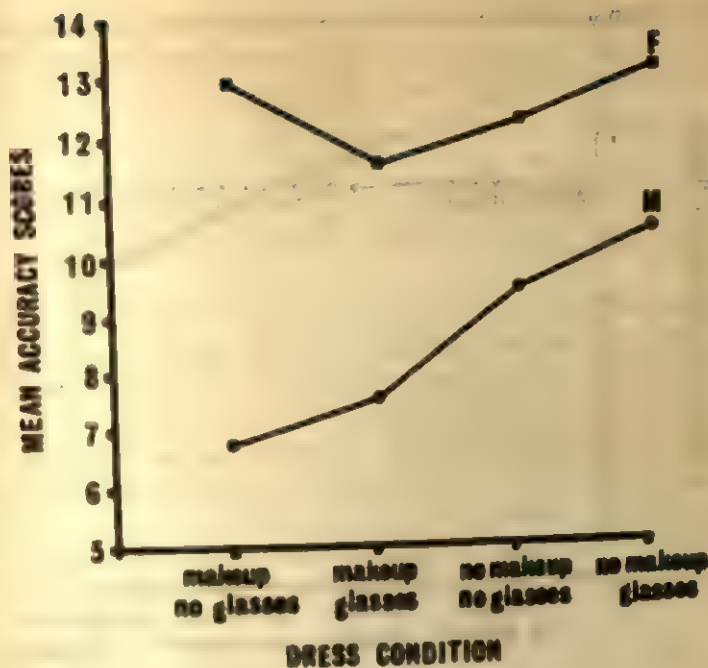


FIGURE 1
OBSERVATIONAL ACCURACY SCORES OVER THE FOUR DRESS CONDITIONS
FOR MALES AND FEMALES

the mean score for the makeup and no glasses conditions was low, while that for the no makeup and glasses condition was relatively high for male subjects. This trend was not so clear in the case of female subjects.

It appears, therefore, that females were significantly more accurate in their observations of the stimulus persons (Figure 1) and that this tendency was relatively independent of the dress variables of makeup and glasses. The accuracy scores for the male subjects, however, were significantly lower than those for female subjects and were affected significantly by both makeup and glasses.

2. Effects of Dress on a Perceptual Estimate

Figure 2 presents the mean hemline estimates over the four stimulus conditions for male and female subjects.

Estimates by male judges were significantly more extreme (higher and lower) than those by female judges ($F = 10.69$, $df 1/50$, $p < .001$). Hemline estimates were significantly higher for stimulus persons wearing makeup

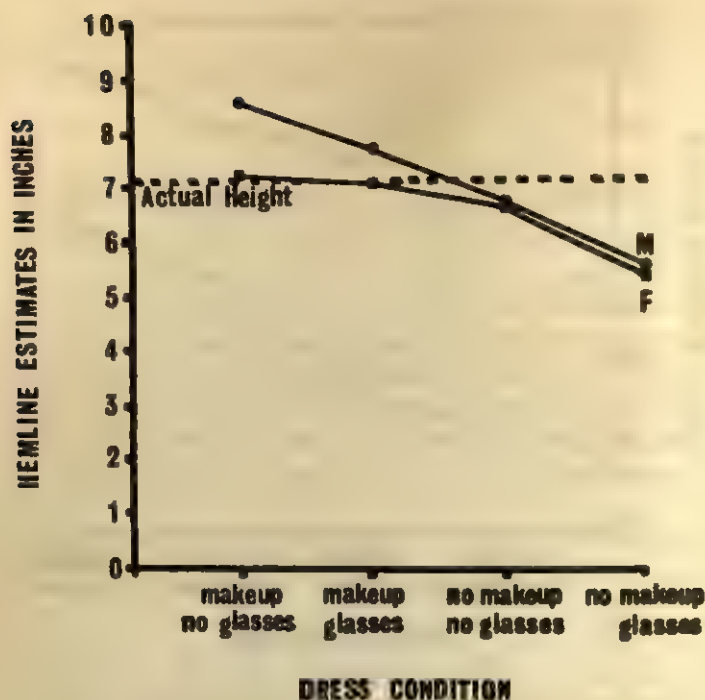


FIGURE 2
HEMLINE ESTIMATES OVER THE FOUR DRESS CONDITIONS
FOR MALES AND FEMALES

than for those wearing no makeup ($F = 130.64$, $df\ 1/50$, $p < .001$) and significantly higher for those not wearing glasses than for those wearing glasses ($F = 97.07$, $df\ 1/50$, $p < .001$).

A significant Sex \times Makeup interaction ($F = 19.72$, $df\ 1/50$, $p < .001$) indicated an overall tendency for hemline estimates to be higher for stimulus persons wearing makeup and for male subjects to be consistently more extreme than female subjects in this tendency. A significant Sex \times Glasses interaction ($F = 5.68$, $df\ 1/50$, $p < .001$) reflected a tendency for differences between males and females to be most marked in the no glasses conditions. A significant Makeup \times Glasses interaction ($F = 15.34$, $df\ 1/50$, $p < .001$) indicated that the highest hemline estimates occurred in the makeup/no glasses condition, the lowest estimates were made in the no makeup/glasses condition. The dress cues had, therefore, a marked effect on the estimates of hemlines with sex differences again important.

3. Effects of Dress on Attractiveness Ratings

Figure 3 presents the mean ratings of attractiveness over the four dress conditions for male and female subjects.

The main effects of Sex, ($F = 4.44$, $df\ 1/50$, $p < .05$), Makeup ($F = 36.23$, $df\ 1/50$, $p < .001$), Glasses ($F = 20.21$, $df\ 1/50$, $p < .001$) were all significant. Attractiveness ratings were more extreme for the male subjects, higher for stimulus persons wearing makeup, and higher for stimulus persons wearing no glasses.

A Sex \times Makeup ($F = 23.39$, $df\ 1/50$, $p < .001$) interaction indicated that attractiveness ratings were higher for stimulus persons wearing makeup and for male subjects to be consistently more extreme in this tendency. A significant Sex \times Glasses ($F = 11.63$, $df\ 1/50$, $p < .01$) interaction reflected a tendency for ratings between males and females to be most discrepant in the no glasses conditions.

The main trends were, therefore, that males tended to be more extreme in their ratings of attractiveness (Figure 3). There was a consistent and

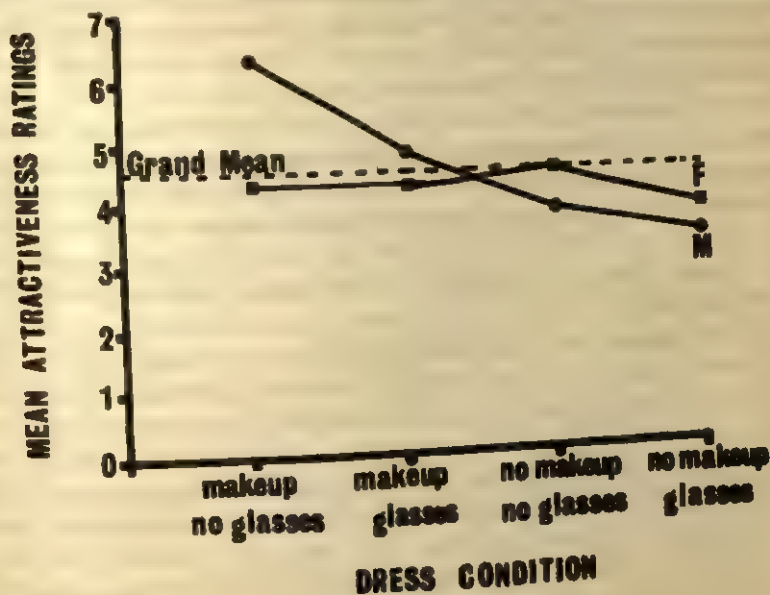


FIGURE 3

ATTRACTIVENESS RATINGS OVER THE FOUR DRESS CONDITIONS
FOR MALES AND FEMALES

significant tendency, particularly by males, for ratings to be high for the girl with makeup and no glasses and to be low for the girl with no makeup and glasses. The similarity between these results and those found for hemline estimates is striking. In fact by inspection of Figure 2 and Figure 3 it can be seen that the graphs are practically identical about their bases for males. Further the graphed line for males in Figure 1 is an exact inverse, thus hemline estimates and attractiveness ratings appear to be an inverse function of observational accuracy.

4. *Effects of Dress on Trait Ratings*

In considering only mean trait ratings¹ above one standard error of the grand mean, there was a general trend for male subjects to make more extreme ratings on the traits than female subjects. For the makeup/glasses condition the predominant male stereotype was one of a girl who is artistic, intelligent, self-confident, sophisticated, neat (in the dress sense), while she was seen as low in naivete, religiousness, sentimentality, seriousness, and shyness. All in all a view of a "worldly" girl. Females, on the other hand though stereotyping to a far lesser degree, saw this girl as conceited, intelligent, neat, cold, and nonreligious. The inclusion of friendly seems to suggest a certain ambiguity in the females' stereotype. The impression formed is one of an outgoing but self-centered person.

In the makeup/no glasses condition the male stereotype was generally unfavorable for internal traits, while favorable for outward behavior. The impression can be summed up by saying that the girl was "the sort of person with whom one would like to be seen but with whom one would hate to live." The trait ratings by females for this stimulus showed a relatively small stereotype response. They saw this girl as intelligent, neat, self-confident, and low in sentimentality.

The no makeup/glasses condition again reflects the relatively high number of stereotype responses by male subjects. The overall impression formed, however, was one of a girl high in traits dealing with conservatism and low in traits of individuality. Females responded in a similar but far less marked way.

Finally in the no makeup/no glasses condition stereotype response by male subjects showed a marked decrease, though their stereotype was the same as for the no makeup/glasses condition. The tendency for specific traits to be affected by the dress cues is highlighted by the fact that when an analysis, similar to that carried out on the attractiveness ratings, was performed on the

¹ Data of the mean trait ratings for male and female subjects across the four stimulus conditions are available from the author on request.

trait "cultured" no significant effects or interactions emerged. It can be concluded that the trait ratings were influenced markedly by the dress cues, indicating differential effects on impression formation. There is some evidence, however, to suggest that certain traits were more central than others. It appears that makeup and glasses, at least, have a large determinative effect on such traits as attractive, conventional, friendly, neat, religious, self-confident, snobbish, and sophisticated when there has been no prior contact with the stimulus person. It could be that these traits, though initially important, diminish in relevance for judging when more experience of the person is gained.

In contrast with other studies (6, 12) it was found that females tended to give fewer extreme ratings and, therefore, fewer stereotyped responses. This could be the result of the observational task having a dampening effect on impression formation in female judges.

To test the hypothesis that there is a relationship between accuracy scores and extreme ratings, frequency counts of trait ratings above one standard error were made separately for the sexes. A comparison of the number of extreme ratings under high and low observational accuracy conditions showed a significant difference for females ($X^2 = 6.3$, $df = 1$, $p < .02$), high accuracy scores receiving fewer extreme trait ratings. No significant relationship was found in male ratings. This tendency is further reflected in the significantly lower variances for female trait ratings under all dress conditions. The dampening effect in stereotype responses by females when observational accuracy was high adds credence to the view that females tend to be more cue dependent (9), with response probabilities being markedly affected by quite specific cues.

Although the subjects were required to indicate what they thought had influenced their impressions, only a few mentioned glasses and none mentioned makeup of any form. There were also frequent errors of omission and commission of articles of clothing (particularly by males). There were 61 of a possible 104 instances in which males attributed the wearing of stockings to stimulus persons wearing makeup even though none had worn them. These effects may be evidence for the more general tendency towards congruity, the perceiver inferring stockings on girls because it is in keeping with the general dress mode of lipstick, eye-shadow, hair coiffured, and so on.

Failure in the recognition of dress cues as determinants of one's impressions has been a common finding in person perception studies. None of McKeachie's (10) subjects identified lipstick as a determinant in their impressions although it was the main treatment difference for his groups. Inability to identify central

cues may be the reason for the lack of clarity in studies of facial cues in judging expressions. For example, Gubar (3) found that subjects could not assign emotions to particular regions of the face, yet Buzby (1) found eyes as more important than mouth in identifying emotions, while Ruckmick (11) found exactly the opposite.

Such inconsistencies have been attributed to the lack of representativeness of the experimental setting and differences in the perceiver, the stimulus person, and the social context. This may be correct but the remedy for an adequate analysis of the cues involved in person perception does not necessarily require the wholesale movement to live settings. What is required is an intensive program of research into the *relative* contributions of phenotypic cues, their validity and determinative effect on impression formation. The complexity involved in the live setting would also be reflected in other more rigorously controlled laboratory settings, but the difficulties are not insurmountable.

D. SUMMARY

Dress cues of makeup and glasses were manipulated in a live setting to test their effect on observational accuracy, a perceptual estimate (height of dress hemline above the knee), and impression formation in male and female subjects. Analysis of variance yielded significant effects of Sex (females more accurate) and interactions of Makeup \times Glasses and Sex \times Makeup \times Glasses. Dress cues and sex of subject significantly affected the hemline estimates and attractiveness ratings, differences being more extreme for males in makeup/no glasses and no makeup/glasses conditions. Low frequency in stereotyped impressions for female subjects, together with high observational accuracy was attributed to greater cue dependence. Implications for the study of phenotypic variables in person perception and further research were discussed.

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University of Waikato
Department of Psychology
Hamilton, New Zealand



EFFECT OF INDIVIDUAL ACHIEVEMENT MOTIVATION ON GROUP PROBLEM-SOLVING EFFICIENCY*

University of Windsor

FRANK W. SCHNEIDER AND JAMES G. DELANEY¹

A. INTRODUCTION

The present study represents an investigation of how the level of achievement motivation of the peripheral members of a centralized communication structure affects the group's problem-solving efficiency.² Very little research has dealt with the relationship between the achievement motivation level of the members of a group and the group's performance. French (4) did report that groups comprised of high achievement motivated subjects were more efficient than low achievement motivated groups under task oriented conditions, but not under feeling oriented conditions. French's results agree with the evidence from research on individual task performance, which consistently indicates that under achievement oriented conditions there is a positive relationship between an individual's level of achievement motivation and his task efficiency (3, 7, 10, 14, 15). Yet, when cues encouraging achievement are at a minimum, the likelihood of finding a significant relationship between achievement motivation and performance decreases (1, 2, 3).

In his review of communication network research, which is based largely upon North American subjects, Shaw (13) develops a rationale concerning performance in centralized networks that appears to lead to a prediction that is contrary to the evidence on achievement motivation. Shaw affirms that the lack of independence associated with a peripheral position in a centralized network mitigates against an occupant's personal task effectiveness. This lack of independence is apt to frustrate the individual's needs for achievement and recognition which are more likely to become engaged with complex, achievement oriented problems than with simple, nonchallenging problems. The peripheral individual, especially under achievement oriented conditions, responds

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² See Shaw (13) for a review of studies relating group member characteristics to performance in communication networks.

by resisting the forces that interfere with the satisfaction of his needs for achievement and recognition, some of which originate in the central person's control of the group's problem-solving machinery. For instance, the peripheral member may be unwilling to accept the solution of the central person, demanding more information until he personally solves the problem.

It follows from Shaw's reasoning that under achievement oriented conditions (complex problems), in contrast to nonachievement oriented conditions (simple problems), a high achievement motivated individual located in the periphery of a centralized network would be less cooperative than an individual low in achievement motivation. Thus, the following interaction was hypothesized: A group with a centralized communication structure will be less efficient in solving complex problems if its peripheral members are high in achievement motivation than if they are low in achievement motivation; however, on simple problems the level of achievement motivation of the peripheral members will not differentially affect the group's performance. While the first half of the hypothesis conflicts with the positive relationship commonly found between achievement motivation and task efficiency, it is consistent with the view offered by Knapp and Green (8) who conceive of the high achievement motivated person as inherently committed to play an active, manipulative role regarding his environment. Consequently, such an individual resists any forces that interfere with his control of his environment.

B. METHOD

1. *Subjects*

The subjects were 48 male and 24 female students enrolled in introductory psychology courses at a Canadian university. In each of four experimental conditions, six three-person groups were run—four male groups and two female groups.³

2. *Apparatus and Materials*

The apparatus used was similar to that which is commonly used in communication network experiments (13). It consisted of a table upon which were attached partitions that formed three cubicles. The partitions prevented the subjects from seeing each other. Slots were cut in the partitions so that messages, written on 3 × 5 cards, could be passed from one cubicle to another. A centralized communication structure was formed by permitting communi-

³ Inspection for possible sex differences revealed that across conditions there was marked similarity between the male and female groups in their problem-solving efficiency.

cation between each of the two peripheral cubicles and the central cubicle, but no communication between the two peripheral cubicles. A silent switch in each cubicle controlled a timer on a master control panel in an adjacent room and permitted each subject to signal that he had solved the problem. For each problem a subject was given a special card on which he wrote his answer immediately after activating the timer switch.

The problems that were used are similar to those used in other studies (e.g., 11). The simple problems required the network members to identify a commonly held symbol; the complex problems required some arithmetic computation. The three simple problems were equal in difficulty. The three complex problems varied slightly in degree of complexity, having been scaled for difficulty by Shaw (12).

Achievement motivation was measured by a composite score of two 20-item achievement motivation scales of the Personality Research Form developed by Jackson (5). Jackson (6) describes the high achievement motivated individual as one who

Aspires to accomplish difficult tasks; maintains high standards and is willing to work toward distant goals; responds positively to competition; is willing to put forth effort to attain excellence.

The achievement motivation items were randomly embedded in an 80-item questionnaire which also included items from the autonomy and desirability scales of the Personality Research Form.

3. Procedure

The achievement motivation questionnaire was administered to the subjects during class time. Students whose scores fell in the upper third, middle third, and bottom third of the sample were designated as high, moderate, and low in achievement motivation, respectively. The subjects were requested by telephone to participate in the problem-solving phase of the study.

Six groups were run in each of four experimental conditions: (a) low achievement motivation, simple problems; (b) low achievement motivation, complex problems; (c) high achievement motivation, simple problems; and (d) high achievement motivation, complex problems. For each group, the two peripheral positions were occupied by subjects similar in achievement motivation (either low or high). The central position always was occupied by a person moderate in achievement motivation.

The experimenter's instructions described the method of communication, with whom each network member could communicate, and the general nature of the task. The instructions indicated that the experiment was an exercise

both in group and individual problem-solving efficiency. Each member of the network was required to indicate his solution, but the task was not complete until every member of the group had indicated a solution to the problem. It was permissible for one member to accept the solution of another.

Each group was required to solve three problems which for all groups were presented in the same order. The complex problems were presented in order of increasing difficulty. Each subject was given a statement of the problem and one-third of the information necessary for its solution. Thus, to solve a problem a group had to pool its information.

C. RESULTS

Network problem-solving efficiency was defined as the time required for all the members to solve the problem: i.e., as the interval between the experimenter's signal to begin and the time when the last subject threw his switch. The results are presented in Table 1. A $2 \times 2 \times 3$ (achievement motivation \times problem complexity \times trials) analysis of variance indicated that problem complexity ($F = 37.80$, $df = 1/20$, $p < .01$) and trials ($F = 16.76$, $df = 2/40$, $p < .01$) were significant sources of variance. Simple problems

TABLE 1
MEAN NUMBER OF SECONDS REQUIRED FOR THE SLOWEST GROUP MEMBER
TO SOLVE THE PROBLEM

Trials	Low motivation		High motivation	
	Simple problems	Complex problems	Simple problems	Complex problems
1	293	951	423	570
2	130	424	176	309
3	72	467	137	311

Note: $N = 6$ per cell.

took less time to solve than complex problems, and the amount of time required to solve the problems decreased across trials. Of particular interest is the significant achievement motivation \times problem complexity interaction $F = 9.30$, $df = 1/20$, $p < .01$). Follow-up analyses revealed that while there was no significant difference between the high and low achievement motivated groups on simple problems ($F = 1.36$, $df = 1/20$), the high achievement motivated groups solved the complex problems at a significantly faster rate ($F = 9.91$, $df = 1/20$, $p < .01$).

In addition, problem-solving efficiency was analyzed by three other achievement motivation \times problem complexity \times trials analyses of variance. In each instance, the analysis clearly substantiated the results of the first analysis (de-

scribed in the preceding paragraph) by demonstrating that problem complexity, trials, and the interaction between achievement motivation and problem complexity were significant factors. The three supplementary analyses of variance were carried out on the following data: (a) mean solution time for each group ($N = 6$ per cell); (b) solution time for each subject occupying a peripheral position—i.e., excluding the central figures who were moderate in achievement motivation ($N = 12$ per cell); and (c) solution time for each subject in the central position ($N = 6$ per cell). The results of analyses (a), (b), and (c) indicated that, as in the first analysis, the following main effects were significant at the .05 level or better: problem complexity ($F = 37.51$, $df = 1/20$; $F = 52.64$, $df = 1/44$; and $F = 29.45$, $df = 1/20$ for analyses (a), (b), and (c), respectively), trials ($F = 16.08$, $df = 2/40$; $F = 26.73$, $df = 2/88$; and $F = 7.58$, $df = 2/40$ for (a), (b), and (c), respectively), and the achievement motivation \times problem complexity interaction ($F = 10.08$, $df = 1/20$; $F = 26.73$, $df = 2/88$; and $F = 5.52$, $df = 1/20$ for (a), (b), and (c), respectively). Unlike the first analysis, achievement motivation was a significant factor in the (b) analysis ($F = 5.58$, $df = 1/44$, $p < .025$) and was marginally significant in the (a) analysis ($F = 3.60$, $df = 1/20$, $p < .10$). The high achievement motivated groups solved the problems faster than the low achievement motivated groups.

An error was defined as an incorrect answer reported by a subject. The error rate did not appear to differentiate the high and low achievement motivated groups. With simple problems the number of errors made by the high and low achievement motivated groups was 1 and 2, respectively; while for complex problems it was 3 and 5.

An achievement motivation \times problem complexity \times trials analysis of variance indicated that significantly more messages were sent under complex problem conditions ($F = 6.72$, $df = 1/20$, $p < .025$) and that the number of messages transmitted decreased across trials ($F = 14.13$, $df = 2/40$, $p < .01$). Achievement motivation was not a significant factor, although there was a clear trend, on all trials and for both levels of problem complexity, for the high achievement motivated groups to send more messages.

D. DISCUSSION

The results fail to support the prediction that for complex problems the achievement motivation of individuals occupying peripheral positions in a centralized communication structure would induce behavior that interferes with the group's problem-solving effectiveness. Rather, the reverse occurred—high achievement motivated groups solved complex problems at a faster rate than

low achievement motivated groups. On the other hand, the results support the prediction that on simple problems no performance differences would occur between high and low achievement motivated groups.

The interaction between achievement motivation and problem complexity is consistent with the experimental evidence that supports the view (1) that the achievement motive is a latent disposition which is reflected in overt striving only under achievement oriented conditions. The present results also agree with those of Litwin (9) who found that attractiveness of success increased with increasing task difficulty and that the slope of the curve of attractiveness of success as a function of difficulty was steepest for those high in achievement motivation.

Apparently, the simple problems possessed little incentive value of success; therefore, as predicted, failed to produce different levels of performance in the high and low achievement motivated groups. However, the complex problems did differentiate between the performance of the high and low achievement motivated groups, suggesting differences in task involvement. But contrary to what was predicted, the idiosyncratic communication structure of the group did not provide conditions wherein the increased task involvement of the high achievement motivated subjects induced behavior that inhibited the group's performance.

A recent study by Zander and Forward (16) may help to clarify the reactions of the high achievement motivated subjects. Zander and Forward found that, at least under competitive conditions, when occupying a peripheral position in a communication network, individuals who are high in achievement motivation show more concern about the success of the group than individuals low in achievement motivation. Perhaps, in the present study the group's success acted as greater incentive than personal success for the high achievement motivated subjects. Elsewhere Zander (17) has emphasized the importance of distinguishing between a member's desire for group achievement and his personal need for achievement.

It is interesting to note that the solution times for the persons occupying the central position, although their achievement motivation was held at a moderate level across conditions, varied directly as a function of the achievement motivation of the peripheral members. This influence on the performance of the structurally dominant member lends further support to the contention (13) that member characteristics represent one of the major variables in the consideration of group behavior.

Perhaps it is advisable to caution against generalizing the present findings well beyond the present population of subjects. Most investigations of com-

munication networks and the relationship between achievement motivation and performance have employed North American college students as subjects.

E. SUMMARY

An experiment was designed to test the hypothesis that a centralized communication network would be less efficient in solving complex problems if its peripheral members were high in achievement motivation than if they were low in achievement motivation; whereas the level of achievement motivation would not differentially affect performance on simple problems. Six three-person groups were run in each of four conditions representing the four combinations of low and high achievement motivation and simple and complex problems. An achievement motivation \times problem complexity interaction indicated that, as expected, with simple problems there was no significant difference in solution times between high and low achievement motivated groups; however, contrary to the hypothesis, with complex problems the performance of the high achievement motivated groups surpassed that of the low achievement motivated groups. The results were interpreted as supporting the theory and evidence regarding the relationship between achievement motivation and task efficiency.

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Department of Psychology

University of Windsor

Windsor 11, Ontario, Canada

THE EFFECTS OF AGE AND CULTURAL FAMILIARITY ON CHILDREN'S CATEGORIZATION RESPONSES* ¹

Department of Psychology, The Pennsylvania State University

ROBERT J. WIEMAN AND GEORGE M. GUTHRIE

A. INTRODUCTION

In studies of children's categorization responses various investigators have traced the development of the ability to conceptualize from preschool years through late childhood. Thompson (14) and Annett (1), among others have classified responses given by children in explaining their performance on sorting tasks. Each found a progression with age from idiosyncratic sorting criteria, through the use of concrete organizational cues, to the development of an ability to categorize on the basis of more abstract, general criteria.

In constructing his theory of cognitive development, Piaget (8, pp. 280-295) has investigated the classifying behavior of children on sorting tasks. Maintaining that the ability to categorize increases as a function of the growth of logic in cognitive activities, he and his colleagues posit three discrete stages of development in conceptual ability through which the child typically passes between the ages of three and nine.

Relatively little attention has been given to children's abilities to categorize culturally unfamiliar items. Davey (3) asked children from the isolated, agrarian culture of Tristan da Cunha, who had been transported suddenly and forcibly to England after a volcanic eruption, to sort pictures of objects familiar to everyday life in England. Testing the children soon after their arrival in England and approximately one year later, Davey concluded that learning to use conceptual categories is culturally related and dependent on socialization, as well as individual age. In examining the effects of cultural relatedness on adult conceptualization, Komachiya (9) found that Japanese subjects learned nonsense labels applied to Japanese-related spatial forms earlier than labels applied to more neutral forms. Such findings substantiate the importance of prior exposure to the ability to conceptualize. There exists a similar dearth of research on the conceptual development of children in non-Western cultures, although studies such as that of Price-Williams (13)

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¹ The research was carried out while the first author was on appointment as a United States Public Health Service first-year fellow in clinical psychology.

indicate that their ability to categorize items also improves with age and item familiarity.

The present study takes a new tack in attempting to assess the influences of age and the cultural familiarity of items on children's categorization responses. It has two objectives: (a) to measure conceptual growth across ages, and (b) to compare the performances of the same subjects on two sets of items matched for type, directions, and difficulty, but differing in cultural familiarity. The second objective differs from earlier work, not only because it permits an examination of the effects of cultural-relatedness on the ability to conceptualize, but because it utilizes with American subjects an instrument developed for use in a non-Western culture.

B. METHOD

1. Subjects

A total of 180 subjects was selected without bias from classes held in several schools in State College, a university-centered community located in central Pennsylvania. The subjects were of the educated middle-class, verbally oriented, and quite cooperative. Fifteen males and 15 females were selected at each age level from four through nine, inclusive. At each level the average child was approximately six months past his last birthday, with the range extending from one to eleven months past.

2. The Instrument

The instrument was composed of items selected from The Philippine Non-verbal Intelligence Test (PNIT) developed by Guthrie, Tayag, and Jacobs (6). The PNIT was designed for use in Southeast Asia, especially in the Philippines, with children between the ages of four and 12. In use, the test requires the individual subject to indicate which of five pictures on a 3 1/4" by 13" card does not belong with the others. The authors assumed that the subject would discover a conceptual relationship among four by which the odd one could be excluded. As a culturally-related test, the PNIT includes pictures of objects indigenous to the Philippines. An example of such an item would be illustrations of four water buffalo and one common cow. Certain other items, however, were judged to be less culturally restricted in content, such as one picturing four birds and one dragonfly. On the basis of the amount of difficulty encountered by Philippine subjects, 10 of the neutral items were matched with 10 highly related to the Philippine culture, and three additional neutral items were chosen to familiarize Ss with the expectations of the task.

3. Procedure

Each *S* was tested individually. *S* was instructed to choose the one that "did not belong with the others" and to explain the relationship among the other four. The three introductory cards were used to demonstrate the task, and then the 20 task cards were presented in sequence, *S*'s response to each being recorded *verbatim*. A more detailed discussion of the testing procedure may be found in Wieman (15).

4. The Scoring: Rationale and Criteria

After all *S*s had been tested, age and sex indications were covered on each response sheet and the sheets mixed before scoring. Each response was categorized according to a scheme developed in previous studies of the classification of children's verbal responses to sorting tasks (1, 4, 5, 7, 10, 11, 12, 14). Six categories were utilized, the first three representing nonconceptual modes of response and the second three conceptual. The quotations included to illustrate each were selected from protocols of *S*s responding to a similar set of items administered in a pilot study. The categories follow:

a. *No Explanation*. These included no response and lack of explanation as to how elements were related. Examples are: "It is the right one, (and) they are not the same as that one" (four-year-old boy), or "It is different from the others" (five-year-old girl). The defining characteristic of this category was the assumption that such responses reflected not only a lack of conceptualization, but also gave no evidence of *S*'s ability to identify the elements in question.

b. *Identification*. This group included descriptions of elements, or naming of elements, without an explanation of how some were related nor why one should have been excluded: for instance, "It is a lizard, (or) It looks like a dress" (seven-year-old boy).

c. *Subcategorization*. These responses involved either multiple classification or the choice of more than one element for exclusion. Examples of the former are: "(Element) two because it is not a bush or a shovel, (and) This one because it is not a chair or a light or a bed" (seven-year-old girl), and of the latter, "Two and four are the same . . . one is a turkey and the other one is a fish" (four-year-old boy). Essentially, this category represented attempts at classification which did not meet the criterion of relating four objects in such a way that the fifth could be excluded.

d. *Perceptual Description*. This category was composed of responses prompted by perceptual cues rather than by characteristic or abstract properties inherent in the stimuli. Perceptual Description responses were those in which a

category was explained without *S* labeling the intraclass similarity nor naming the class. Examples are: "(Element five) because these ones aren't straight up" (four-year-old boy), "That don't have any on it like the rest" (five-year-old boy), and "It's bigger than the others" (seven-year-old girl).

e. Similarity. For this category, a characteristic defining a class was named by *S*, such that one element could be eliminated. Instances included, "It doesn't have as much grass as the others" (six-year-old boy), and "It has grapes and the others don't" (nine-year-old girl).

f. Class Name. A class name was given in responses of this category, signalling the use of a superordinate which functionally eliminated one element from the set. Examples are: "(Element) four is wooden; the others are hay" (eight-year-old boy), "They are circles; it is a ball" (four-year-old boy), and "It is a pineapple, and the others are vegetables" (eight-year-old girl).

5. *The Reliability of the Classification Scheme*

The reliability of the classification scheme was determined by comparing *E*'s scoring with that of two judges who had not previously been associated with the study. One judge agreed with *E*'s scoring 90 percent and the other 88 percent when considering all six categories of explanation. When simple nonconceptualization (the combination of the frequencies of the first three categories) was compared to simple conceptualization (the combination of the frequencies of the remaining categories), the first judge agreed with *E*'s scoring 93 percent and the second 92 percent (15).

C. RESULTS

Tables 1 and 2 record, by categories and across ages, the frequencies of the responses to culturally neutral and to Philippine-related items, respectively. Examined as contingency tables, responses to both sets of items were highly significant (culturally neutral: $\chi^2 = 538.15$, $p < .005$; Philippine-related: $\chi^2 = 344.15$, $p < .005$). The percentages of conceptual responses associated with each age are also listed. It should be noted that in Table 1 the frequency of conceptual responses first exceeded that of nonconceptual at the six-year level.

A comparison of Tables 1 and 2 demonstrates that changes in conceptualization were not limited to shifts in responding to familiar items alone. As age increased, so did the ability to deal conceptually with less familiar stimuli, although conceptualization on these items lagged behind that on the more familiar.

TABLE 1
FREQUENCIES OF RESPONSES BY AGE AND SCORING CATEGORY TO CULTURALLY NEUTRAL ITEMS

Age	No Expla- nation	Category			Class Name	Total	Percent conceptual
		Identi- fication	Subcate- gorization	Perceptual Description			
4-5	55	152	27	8	22	300	22
5-6	8	138	34	9	33	300	40
6-7	12	67	29	10	36	300	64
7-8	3	54	27	16	45	300	72
8-9	2	33	17	12	46	300	83
9-10	0	28	3	9	57	300	90
Totals	80	472	137	64	239	1800	62

TABLE 2
FREQUENCIES OF RESPONSES BY AGE AND SCORING CATEGORY TO PHILIPPINE-RELATED ITEMS

Age	No Expla- nation	Category				Total	Percent conceptual
		Identi- fication	Subcate- gorization	Perceptual Description	Similarity		
4-5	59	174	17	16	26	300	17
5-6	29	135	30	30	64	300	35
6-7	25	108	39	41	73	300	43
7-8	10	98	24	34	108	300	56
8-9	5	80	30	46	117	300	62
9-10	2	57	17	43	153	300	75
Totals	130	652	157	210	541	1800	48

D. DISCUSSION

Table 1 records the frequencies associated with the six categories of responses for the culturally neutral items, thus yielding information on the various strategies of conceptualization used by children at different ages. On the whole, the employment of nonconceptual sorting explanations showed a decrease across ages from four through nine. The frequency of nonconceptual, nonidentity responses (No Explanation) declined rapidly with increasing age, reflecting an increase not only in the ability to conceptualize, but also in the ability to verbalize about pictured stimuli. Identification, while also decreasing, accounted for the greatest frequency of nonconceptual responses at all ages. The use of Subcategorization accounted for a small, stable proportion of responses through age seven, and then plummeted rapidly through age nine.

Overall, a consistent increase in responses interpreted as signifying conceptualization was noted. As presented in Table 1, the combined conceptual categories accounted for a larger proportion of responses as age increased. Of these, use of Similarity and Class Name rose steadily, while Perceptual Description showed little change. Its power as a differentiating tool is demonstrated better when we consider its use on Philippine-related items. Confirmed, then, is the pattern noted by Thompson (14) of the gradual increase with age of the ability of children to conceptualize relationships.

In terms of the Piagetian formulation, several observations may be made. Inhelder and Piaget (8, pp. 280-295) posited three discrete stages of growth in the conceptual thought of the child: preclassificatory Graphic Collections, quasi-classificatory Nongraphic Collections, and Logical Classification. The present results indicate a rapid increase across the age levels associated with each of the Piagetian stages in the ability to form conceptual relations. As Table 1 indicates, however, the incidence of conceptual responses to familiar items was found to increase steadily with age. No indication of a marked spurt in the rate of increase associated with the onset of the Piagetian stages was apparent.

In directly investigating the three Piagetian stages, both Braine (2) and Elkind (4) claimed to have found the commencement of the third stage, Logical Classification, at age six, up to a year earlier than Inhelder and Piaget had predicted. While not focused on differentiating the use of the specific strategies posited by the Piagetian model, the present study found that by age six, conceptualization had equalled nonconceptualization in the frequency of responses to familiar items, and by age seven had clearly surpassed it. By the age of six, also, Similarity, a conceptual category, had replaced nonconceptual Identification as the modal response (Table 1).

In the same work, Inhelder and Piaget (8, pp. 119-125) reported the results of an investigation using an oddity problem sorting task similar to that employed in the present study. Asking children from five to nine years of age to sort geometric forms so as to exclude one odd element, they found that those at the stage of Nongraphic Collections (ages 5-7) were successful 50 percent of the time with the task, and those at the third stage (ages 7-9) 75 percent. These percentages approximate those found by pooling the conceptual response frequencies of Table 1. Children of four and five, the age of Graphic Collections, successfully conceptualized on 31 percent of the items; children from five to seven were successful with 59 percent of the items; and those from seven to nine years of age dealt conceptually with 81 percent of the items. Again, the ability to conceptualize was found to increase across the stages of the Piagetian model of conceptual development.

A comparison of Tables 1 and 2 indicates that the increase in conceptualization was not restricted to the neutral items. In dealing with the Philippine-related items, however, subjects at all age levels were less successful in utilizing conceptual strategies.

At all ages, the combined nonconceptual categories appeared in more responses to Philippine-related than to neutral items. Not only did familiar items elicit fewer responses that could be classified as No Explanation, but the frequency of such responses decreased proportionally faster with age. Starting with age six, neutral items were also far less likely to elicit Identification responses than those that were Philippine-related, and at ages eight and nine, when many more neutral items were being conceptualized, the Philippine-related items remained more likely to be dealt with Subcategorically, through pairing or the relating of fewer than the requisite four elements per item.

By contrast, two of the three conceptual categories showed greater increases with age on culturally neutral items than on the Philippine-related. The third, Perceptual Description, appeared to be a relatively unused strategy when the child was familiar with the elements he was grouping; on Philippine-related items, however, its use increased with age. These results indicated that, as children's conceptual abilities increased, abstract characteristics, represented here by the categories of Similarity and Class Name, were used more and more to classify familiar elements. As the use of Perceptual Description demonstrated, however, when less familiar stimuli were presented, conceptualization was likely to be more dependent on the immediately observable characteristics of the elements than on their abstract properties.

While the preferred mode of successfully conceptualizing both sets of items was through use of Similarity, this strategy was employed with roughly 50

percent greater frequency on culturally neutral than on Philippine-related items at all ages. In dealing with the more familiar items the second most frequently used strategy was that of Class Name, the invocation of a superordinate in describing a relationship. Although increasing with age, the frequency of this type of response to less familiar items remained lower. On the Philippine-related items, by contrast, the second preferred strategy proved to be the description of perceptual cues common to the four elements and not the fifth. This confirmed Davey's (3) conclusion that children sorting unfamiliar items tended to tie their responses to surface or perceptual qualities. This practice was also reported by Davey to lessen as a function of increasing familiarity with the alien culture.

Komachiya's finding (9), that conceptualization of familiar items could be accomplished with greater facility than with culturally unfamiliar items, was also confirmed. We found that two of three conceptual categories appeared more frequently with neutral items than with Philippine-related at all age levels; only conceptualization by Perceptual Description proved more popular on Philippine-related items. Also, the frequencies of two categories of non-conceptual responses fell off more quickly on familiar items than on the alien. A third, Subcategorization, was not as clearly interpretable.

E. SUMMARY

With the use of items from the Philippine Nonverbal Intelligence Test, an instrument developed for use in a non-Western culture, conceptualization was studied in a group of American children between the ages of four and nine. Verbal responses of the children to an oddity problem sorting task were recorded and scored for conceptualization or nonconceptualization according to six strategies identified in earlier studies. Statistically significant differences were found in changes in conceptualization by age, use of the differing strategies of conceptualization-nonconceptualization, and conceptualization as influenced by cultural familiarity. The relevance of these results to a Piagetian scheme of conceptual development was discussed.

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Department of Psychology
Pennsylvania State University
417 Psychology Building
University Park, Pennsylvania 16802

CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 86, 309-310.

INTELLIGENCE, EXTRAVERSION, AND NEUROTICISM IN RELATION TO SEASON OF BIRTH* ¹

*Department of Psychology, Lawrence University; and
Lake View Psychiatric Nursing Home, Calcutta, India*

SURESH KANEKAR AND SUMITRA MUKERJEE

There is conflicting evidence with respect to the relationship between intelligence and season of birth. The findings of Orme² with British subjects and of Mohan and Mohan³ with Indian subjects indicate that summer-borns do better on intelligence tests than winter-borns. On the other hand, the assumption of intellectual superiority of the summer-borns is not supported by the findings of Davies⁴ whose subjects were British and of Craddick⁵ whose subjects were residents of southwestern U. S. A.

The present study was undertaken to explore further the relationship between season of birth and intelligence. Extraversion and neuroticism were the other two variables that were studied in relation to season of birth. Of secondary interest was the study of these three variables in relation to sex and area of study.

The subjects of the present study were 80 graduate students of Nagpur

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¹ This report is based on the second author's thesis, directed by the first, submitted to Nagpur University in partial fulfillment of the requirements of the M.A. degree.

² Orme, J. E. Intelligence and season of birth. *Brit. J. Med. Psychol.*, 1962, 35, 233-234.

³ Mohan, V., & Mohan, J. Intelligence and season of birth. *Psychol. Stud.*, 1966, 11, 31-34.

⁴ Davies, A. D. M. Season of birth, intelligence and personality measures. *Brit. J. Psychol.*, 1964, 55, 475-476.

⁵ Craddick, R. A. WISC and WAIS IQs as a function of season of birth. *Psychol. Rep.*, 1966, 18, 259-264.

University, Nagpur, India. Their ages ranged from 18 to 28 years. The total sample consisted of 20 male Arts students, 20 male Science students, 20 female Arts students, and 20 female Science students. In India, the area of Arts includes humanities and social sciences, while the area of Science embraces the natural sciences.

The measure of intelligence was Raven's Standard Progressive Matrices Test. Extraversion and neuroticism were measured by the use of Form A of the Eysenck Personality Inventory. All the scales were administered without any modification or translation. Relevant personal information—viz., date of birth, sex, and area of study—was properly recorded. The results were analyzed by appropriate grouping and t tests all of which were two-tailed.

The year was divided into three seasons: summer (March through June), the rainy season (July through October), and winter (November through February). There were 30 summer-borns (17 males and 13 females), 28 born during the rainy season (11 males and 17 females), and 22 winter-borns (12 males and 10 females). On the variable of intelligence, the summer-borns scored significantly higher than the winter-borns ($t = 2.19, p < .05$). Those who were born in the rainy season had an intermediate score which did not differ significantly from the other scores. Thus the present data confirm the results of Mohan and Mohan, whose subjects also were Indians, and offer a cross-geographical support to Orme's findings. No significant differences were obtained on extraversion and neuroticism in relation to season of birth.

Separate analyses of the results with respect to sex and area of study revealed that the females, as compared to the males, scored significantly higher on intelligence ($t = 3.02, p < .01$) and significantly lower on extraversion ($t = 3.33, p < .01$), and the Science students, as compared to the Arts students, scored significantly higher on intelligence ($t = 2.61, p < .02$), significantly lower on extraversion ($t = 2.02, p < .05$), and also significantly lower on neuroticism ($t = 2.82, p < .01$).

Department of Psychology
Lawrence University
Appleton, Wisconsin 54911

DRAWING ABILITY OF SOLI RURAL CHILDREN: A NOTE*

Department of Psychology, University of Aberdeen

JAN B. DEREGOWSKI¹

Hudson² and others^{3,4} who observed drawings of relatively unacculturated groups noted a general absence of drawing skills. In order to provide a degree of measure of the skills available in a group drawn from a similar population⁵ the following study was carried out.

Soli children in Zambia from three top grades (grade 5, 6, and 7, having mean stated ages of 13.4, 13.4, and 15.0 years) of a rural primary school were asked to participate in a competition by drawing one of the following: (a) a book on a table, (b) a car on a road, (c) a lion chasing a hare.

The drawings obtained were assessed, without knowledge of ages and grades of the authors, by three independent British judges on criteria listed below. Mean assessments obtained, based on a 10-point scale, are given in the brackets immediately after the relevant criterion. (In the case of the last two criteria, the second assessment within each grade is that given by a judge who rated the drawings identically on those two criteria.)

1. Artistic merit (Gr.5: 3.3; Gr.6: 3.0; Gr.7: 3.1).
2. Awareness of perspective (Gr.5: 1.7; Gr.6: 1.1; Gr.7: 1.1).
3. Author's age (Gr.5: 8.5; Gr.6: 8.7; Gr.7: 8.6).
4. Artistic skill assuming the author to be in Grade 6
[Gr.5: 3.3(4.3); Gr.6: 3.3(3.8); Gr.7: 2.5(4.5)].
5. Artistic skill assuming the author to be in Form 5 of secondary school
[Gr.5: .7(4.3) Gr.6: .5(3.8); Gr.7: .3(4.5)].

The assessments obtained vary considerably with the criteria. Low marks were scored by the subjects on Awareness of Perspective, in contrast with

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² Hudson, W. The study of the problem of pictorial perception among unacculturated groups. *Internat. J. Psychol.*, 1967, 2, 89-107.

³ Appia, B. La representation humaine dans les dessins d'enfants noirs. *Bull. Inst. Francais d'Afrique Noire*, 1939, 1(2-3), 405-411.

⁴ Dennis, W. The human figure drawings of Bedouins. *J. Soc. Psychol.*, 1960, 52, 209-219.

⁵ Jaspan, M. A., *The Ila-Tonga peoples of North-Western Rhodesia*. London: International African Institute, 1954.

high artistic merit marks made on assumption that the subjects were in grade 6. The differences between the ages as stated by the subjects and the assessed ages for each subject were calculated and used in an analysis of variance [$F(2.62) = 4.85, p < .05$] and the Newman-Keuls test. The means of the differences were Gr.5: 4.9 yrs.; Gr.6: 4.7 yrs.; Gr.7: 6.4 yrs. It was found that the grade 7 subjects differed significantly from the subjects in grades 5 and 6.

The differences between the ages of children in the corresponding grades in English schools (taken as 10, 11, and 12 years) and the assessed ages were also considered. In the case of all three grades there was a statistically highly significant difference [$F(2.62) = 12.2, p < .01$] and the assessed age fell below the age of English schoolchildren. The mean differences were Gr.5: 1.5 yrs.; Gr.6: 2.3 yrs.; Gr.7: 3.4 yrs. The extent of these differences probably reflects the extent to which maturation of the subjects compensated for environmental, educational, and other handicaps.

This implies that the higher age of Zambian pupils failed to compensate completely for the handicapping factors. The significant increase (by the Newman-Keuls test) of the discrepancy with grade suggests further that the compensatory effect is not maintained at the same level. Similarly, significantly larger differences between the seventh grade and the other two grades, and lack of difference between the other two grades where the discrepancies between elicited and assessed ages are concerned, suggest that no significant improvement had taken place in pupils since they entered grade 5.

Department of Psychology
University of Aberdeen
Scotland

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

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CONFORMITY IN COLLEGE MEN AND WOMEN AS A FUNCTION OF LOCUS OF CONTROL AND PRIOR GROUP SUPPORT*¹

Department of Psychology, University of Maine

RICHARD M. RYCKMAN AND WILLIAM C. RODDA

Studies of conformity have indicated that internally oriented students tend to conform less than externals on skill determined tasks.² The present investigation examined their conformity behavior under chance conditions. Conformity behavior was assessed in a modified Crutchfield situation³ where internal and external Ss selected from an introductory psychology class ostensibly received unanimous agreement from four others over a series of line-matching problems before receiving total disagreement from these others on a second series. In a baseline condition, Ss received no support for their judgments, but then experienced total disagreement from the four other Ss for the second series of trials. It was predicted that externals would conform less than internals following no support, but would conform more than internals following unanimous group agreement. On the basis of a finding by Rotter and Mulry,⁴ it was expected that externals in the baseline condition would value reinforcements obtained under chance conditions more highly than internals and would,

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¹ The authors thank Dr. William F. Stone for his assistance in the preparation of this article. We also wish to acknowledge the help of Roberta Staples and Linda Wild as experimenter assistants.

² For a description of the locus of control construct and a summary of the various conformity studies, see Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. *Psychol. Monog.*, 1966, 80, Whole No. 609.

³ Julian, J. W., Ryckman, R. M., & Hollander, E. P. Effects of prior group support on conformity. *J. Soc. Psychol.*, 1969, 77, 189-196.

⁴ Rotter, J. B., & Mulry, R. C. Internal versus external control of reinforcement and decision time. *J. Personal. & Soc. Psychol.*, 1965, 2, 598-604.

therefore, resist group influence attempts. In regard to the unanimous support condition, it was hypothesized that the greater importance of reinforcements for externals would lead to a greater dependence on the group than for internals and to higher levels of subsequent conformity.

Finally, possible differences in susceptibility to influence for men and women students were examined. An investigation by Ryckman, Stone, and Elam⁶ revealed that external women reported being more emotionally aroused by experimenter criticism of their performances under chance conditions than external men and internal men and women. Thus, it was hypothesized that this high degree of concern would manifest itself in the highest levels of conformity behavior for them as compared to the other groups.

While the predicted interaction between locus of control and prior support level was not obtained, the results did indicate that internal men conformed more than externals, while external women conformed more than internals, regardless of prior support level ($F = 4.36$, $df = 1,72$, $p < .05$). As expected, external women tended to conform more than the other groups of men and women with different locus of control orientations. Postsession questionnaire data indicated further that Ss perceived the task as primarily chance controlled. Unexpectedly, internals were more concerned about their performances than externals. This latter finding reveals the inadequacy of the general assumption that externals value reinforcements obtained under chance conditions more highly than internals. It appears, therefore, that the underpinning of performance differences for internals and externals is more complex and varied than originally imagined. Although the instructions mentioned that task success was strictly a matter of chance, they also implied that the problems were capable of solution. Thus, internal men may have conformed more than externals because they were primarily concerned with meeting the task requirements. External women, in contrast, were not very concerned with their task performances, but they may have conformed more than the other subjects because they viewed yielding to group standards as socially desirable behavior. Future investigations might aim at a more precise identification of these motivational determinants of differences in performance and of the manner in which these variables interact with locus of control orientation in social influence situations.

Department of Psychology
University of Maine
Orono, Maine 04473

⁶ Ryckman, R. M., Stone, W. F., & Elam, R. R. Emotional arousal as a function of perceived locus of control and task requirements. *J. Soc. Psychol.*, 1971, 83, 185-191.

THE FACTORIAL INVARIANCE OF ATTITUDES TOWARD PEOPLE (ATP)*¹

New York University

GOTTLIEB C. SIMON

Factor analyses of a large number of personality, aptitude, and attitude tests administered to female students in the Border South have produced a factor that appears to be related to the degree of prejudice reduction under unintended interracial contact.² This factor, called here Attitudes Toward People (ATP), is loaded with measures of anomie, Machiavellianism, suspicion, and faith-in-people. In view of the predictive and theoretical promise of this factor, the present research attempted to replicate ATP on a Northern sample, and on both sexes.

Ten tests reported to load on ATP, and two others included for exploratory purposes, were arranged in a battery consisting of the Chein Anomie and Anti-Police scales,³ the Suspicion subscale of the Buss Hostility Inventory,⁴ the Rosenberg Faith-in-People⁵ and Rotter Internal-External Control⁶ scales, the Christie F, Anomia and Machiavellian scales,⁷ the Wrightsman Philosophies of Human Nature (PHN),⁸ and the Agger-Goldstein Political Cynicism⁹ scales. This battery was administered to 172 introductory psychology

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¹ This study was based on a dissertation submitted to the Department of Psychology, New York University, in partial fulfillment of the Ph.D. degree. The author wishes to express his appreciation to Lawrence S. Wrightsman and Stuart W. Cook for their gracious cooperation and encouragement during this investigation.

² (a) Cook, S. W. Motives in a conceptual analysis of attitude-related behavior. In M. R. Jones (Ed.), *Nebraska Symposium on Motivation*. Lincoln: Univ. Nebraska Press, 1969. (b) Wrightsman, L. S., & Cook, S. W. Factor analysis and attitude change. Paper presented at Southeastern Psychological Association convention, Atlanta, Georgia, April, 1965. (c) Wrightsman, L. S., & Cook, S. W. The factorial structure of "Positive Attitudes Toward People." Paper presented at Southeastern Psychological Association convention, Atlanta, Georgia, April, 1967.

³ Chein, I., Gerald, D. L., Lee, R. E., & Rosenfeld, E., with Wilmer, D. M. *The Road to H: Narcotics, Delinquency, and Social Policy*. New York: Basic Books, 1964.

⁴ Buss, A. H. *The Psychology of Aggression*. New York: Wiley, 1962.

⁵ Rosenberg, M. Misanthropy and political ideology. *Amer. Sociol. Rev.*, 1956, 21, 690-695.

⁶ Rotter, J. Generalized expectations for internal vs. external control. *Psychol. Monog.*, 1966, 80(1), Whole #609.

⁷ Christie, R., & Geis, F., Machiavellianism. In E. F. Borgatta & W. W. Lambert (Eds.), *Handbook of Personality Theory and Research*. Chicago: Rand McNally, 1968.

⁸ Wrightsman, L. S. Measurement of philosophies of human nature. *Psychol. Rep.*, 1964, 14, 743-757.

⁹ Agger, R. E., Goldstein, M. N., & Pearl, S. A., Political cynicism: Measurement and meaning. *J. Politics*, 1961, 23, 477-506.

students, 83 females and 89 males, at two campuses of New York University. The 10 ATP-loading tests and the Christie F-scale (the latter previously reported as *not* loading on ATP was included as a "negative" marker variable) were factor analyzed. The BMDO3M factor analysis program¹⁰ was used to reach an orthogonal, unrotated solution. Squared multiple correlation coefficients served as the estimates of communality; and the data for males and females were treated separately.¹¹

Although six factors were required to account fully for the common variance for both males and females, only the first factor in each analysis met the criteria for a necessary, reliable, and meaningful factor.¹² It was the only one with an associated eigenvalue greater than 1.0, and accounted for 75% of the common variance in the male data and 66% of the common variance in the female data. Both qualitative and quantitative considerations indicate the identity of this overarching factor and ATP. For instance, all 10 tests reported by Wrightsman and Cook to load on ATP load on this factor; the Christie F-test does not load on ATP either in the prior studies or here; and the Wrightsman PHN has the highest loading in both of the present analyses and in the one factor analysis in which it was previously included (.85 and .76 *vs.* .75). Quantitative confirmation of this similarity is given by two measures of factorial invariance, the root mean square and the coefficient of congruence. The latter index, which is equal to 1.0 when the factors match perfectly, yields values ranging from .96 to .99; the former, equal to zero when the match is perfect, yields values ranging from .10 to .17. For both indices the highest values obtain between analyses involving sex, regional, and investigator differences.

The interpretation of these coefficients requires caution,¹³ since there is no adequate significance test for them, and they have a tendency to produce "good" results whenever the loadings being compared have like signs. Nevertheless, the present evidence strongly supports the conclusion that ATP is a reliable factor invariant across sex, regional, and investigator differences.

American Psychological Association
1200 Seventeenth Street N.W.
Washington, D. C. 20024

¹⁰ Dixon, W. J., *Ed.* BMD: Biomedical Computer Programs. Los Angeles: Health Sciences Computing Facility, School of Medicine, U.C.L.A., 1965.

¹¹ For supplementary material, order document NAPS 01758, from CCMIC National Auxiliary Publications Service, 909 Third Avenue, New York, New York, 10022; remitting \$2.00 for microfiche or \$5.00 for photocopies.

¹² Kaiser, H. F. The application of electronic computers to factor analysis. *Educ. & Psychol. Meas.*, 1960, 20, 141-151.

¹³ Harman, H. H. *Modern Factor Analysis*. Chicago: Univ. Chicago Press, 1960.

THE RELATIONSHIP BETWEEN SPECIFIC PSYCHOLOGY CLASSES AND MALADJUSTMENT—A REPLICATION STUDY*¹

Brigham Young University

BLAIR R. SWANSON AND ROBERT J. HOWELL

The purpose of this study was to replicate and refine an earlier study by Wise.¹ He demonstrated that students who enrolled in psychology courses were more maladjusted than students who enrolled in other classes at the university level. Wise assumed that it was not psychology *per se* that was the selective factor, but rather the specific course content. His major assumption was that as the amount of morbid subject material increased (i.e., from classes in general psychology to classes in abnormal psychology) there would be a greater number of maladjusted students attracted to the course. The amount of bizarre or morbid material, then, attracted selected students with varying degrees of emotional problems.

There were two limitations in Wise's study: (a) the use of multiple *t*-tests and (b) the failure to control for the Ss' class standing. In the present study, Ss were drawn from an original group of students enrolled in five classes at Brigham Young University. They were equated for age, year in school, and proportion of males and females. The Ss came from classes in communications ($n = 28$), introductory psychology ($n = 35$), child psychology ($n = 30$), sociology of mental illness ($n = 20$), and abnormal psychology ($n = 35$) and were administered the Cornell Index (Form N2).

Analysis of variance performed across classes yielded an *F* ratio of .99, *df* 4/147, $p > .05$. Thus, the results do not confirm those of Wise. In fact, the mean for the abnormal psychology students was the lowest, 5.03 (showing better adjustment); and the mean for the communications students was the highest, 7.68.

At Brigham Young University, abnormal psychology is a senior course and is typically taken as one of the last courses that the students take. The students by then might have a greater awareness of themselves including realistic

* Received in the Editorial Office, Provincetown, Massachusetts, on July 9, 1971. Copyright, 1972, by The Journal Press.

¹ Wise, L. M. Abnormal psychology as a selective factor: A confirmation and extension. *J. Educ. Psychol.*, 1959, 50, 192-194.

appraisals of their strengths and weaknesses and an adequate level of personal maturity.

Department of Psychology
Brigham Young University
Provo, Utah 84601

CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 86, 319-320.

ALIENATION IN AN AUSTRALIAN UNIVERSITY*

Macquarie University

J. J. RAY AND A. J. SUTTON

Some results concerning student alienation in an Australian university are presented. The particular question of concern is whether alienation is irrevocably related to personal neuroticism. For a careful examination of this question, it was deemed important to separate alienation from the university and alienation from society as a whole.

A battery of scales was given to 262 students in the 1969 introduction to psychology course at Macquarie University, N.S.W., Australia. These included the Eysenck Neuroticism and Radicalism scales and two new scales to measure "Alienation from the University" and "General Alienation." The reliability of these latter scales were .61 and .83. A "yeasaying" score was also found by adding "agree" responses across 28 conservatism and 28 radicalism items.

It was found that university alienation is not significantly related to Neuroticism ($r = .10$, $Z = 1.36$), but general alienation is ($r = .40$). Yeasaying is not significantly related to any of the four scales. Both sorts of alienation are significantly related to political radicalism ("R" scale). The two forms of alienation themselves correlated .36.

A possibility that the correlation between neuroticism and general alienation was due to an atypical subset of items within the alienation scale was examined by analyzing the structure of that scale. A cluster analysis of the

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† Details of these scales are to be found in "Alienation from the University," an unpublished mimeo available from either of the present authors.

whole set of items was carried out. Six first-order clusters resulted. The distribution in these clusters of items showing a significant relationship with neuroticism was examined by the chi-squared test. Chi-squared was 9.3 which is less than the critical value of 11.07 for 5 degrees of freedom. The "neurotic" items were, therefore, shown to be distributed randomly among the clusters observed.

A comparison of responses on the two alienation scales with responses to other items in the questionnaire revealed that the university alienate (but not the general alienate) disapproved of students who are absorbed in his/her class work ($r = .25$), whereas the general alienate (but not the university alienate) disapproved of students who help other students with their work ($r = .12$). This might mean that the person alienated from society as a whole is also more *intensely* alienated, in the sense of even showing dislike for affectively positive interpersonal interaction.

It is confirmed, then, that students alienated from the university tend to be alienated from society as a whole. It is not, however, true that students alienated from the university tend to be neurotic. A caution is necessary in considering the correlations above with individual questionnaire items. The study does not purport to be of student activists as a group, but rather of activist tendencies in a general group of students. This may explain the overall low level of the significant correlations given. We conclude, therefore, that at least in Australia the picture of student revolt given by Lipset² as low neurotic rational rebellion is truest of the person alienated from the university only. The more classical picture of a disturbed and aggressive person seems truest of the student alienated from society as a whole.

School of Sociology

University of New South Wales

P.O. Box 1

Kensington 2033

New South Wales, Australia

² Lipset, S. M. Students and politics. In Lipset, S. M., & Wolin, S. S. (Eds.), *The Berkeley Student Revolt*. N. Y.: Doubleday, 1965.

EFFECTS OF INVOLVEMENT ON PETITION SIGNING*

Department of Psychology, University of Missouri—Kansas City

MORTON GOLDMAN

The petition is not infrequently used as a means to exert social pressure for change, the assumption being that the more signatures contained on the petition, the greater is the desire for the prescribed change. Previous research has shown, however, that factors other than the issue stated in the petition may affect whether an individual will affix his name to the petition.^{1,2} Also related to judging the strength of an issue according to signatures on a petition is the assumption that feelings and attitudes have a strong and consistent relationship to overt behavior. This assumption, as Wicker³ has indicated, may be in error. As added action and involvement are required to support one's attitudes, there is less likelihood that action will be correlated with beliefs.

The current study sets up four conditions whereby the signing of a petition implies different degrees of involvement and tests the validity of the hypothesis that the willingness to sign a petition is inversely related to the expected involvement.

The data for this study were collected by a social psychology class of 32 students. The Ss were 384 students chosen from central points within the college campus, with approximately 96 Ss in each of four treatments. No attempt was made to control for age, sex, major, etc. of the sample, but only Ss walking alone were used. Each student from the social psychology class administered 12 petitions, three from each of four treatments, the petitions being shuffled to randomize the order. The issue was identical for all petitions and had been selected by a pretest, being supported by approximately 50 percent of the student body. The issue stated: "We would like the university officials to abolish the present grading system and replace it with a pass-fail (credit-no credit) system for all courses at the University."

The independent variable was induced by using four treatments consisting of minimum, low, moderate, and high involvement. The petition for the mini-

* Received in the Editorial Office, Provincetown, Massachusetts, on April 28, 1971. Copyright, 1972, by The Journal Press.

¹ Blake, R. R., Mouton, J. S., & Hain, J. D. Social forces in petition signing. *Southwestern Soc. Sci. Quart.*, 1956, 36, 385-390.

² Helson, H., Blake, R. R., & Mouton, J. S. Petition signing: An adjustment to situational and personal factors. *J. Soc. Psychol.*, 1958, 48, 3-10.

³ Wicker, A. W. Attitudes versus action. *J. Soc. Iss.*, 1969, 4, 41-78.

imum involvement treatment required the *S* simply to check whether he was "for" or "against" the petition issue. The petition for the low involvement treatment required the *S* to sign the petition indicating his support for the petition issue. The petition for the moderate involvement treatment contained an additional statement about being contacted for a possible meeting. Signing the petition for the high involvement treatment implied willingness to attend a meeting to implement action.

The results showed that as involvement increased the willingness to sign the petition decreased, with 61 percent of the *Ss* checking "for" in Treatment 1, 52 percent signing in Treatment 2, 47 percent signing in Treatment 3, and 32 percent signing in Treatment 4. The chi square computed for the data was 16.697 ($df = 3, p < .001$).

The use of signatures for assessing public opinion was questioned in this study. This study found that many individuals were willing to sign if some way could be found to minimize the implied involvement. On the other hand, to the extent that signing a petition implied a moderate amount of involvement, individuals having an opinion in line with the petition issue were reluctant to sign.

Department of Psychology
University of Missouri—Kansas City
Kansas City, Missouri 64110

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AUTHOR INDEX

Anderson, Harry E., Jr.	167	Larsen, Knud S.	247
Bagley, Christopher	175	Levine, Murray D.	121
Barocas, Ralph	23	Looft, William R.	181
Bashaw, W. L.	167	McGaffey, Charles N.	261
Boyd, J. Edwin	75, 93	McGlynn, Richard P.	89, 173
Bruning, James L.	105	Mitchell, Terence R.	33
Bruvold, William H.	127	Mukerjee, Sumitra	309
Cattell, Raymond B.	187	Nichols, K. Ernest	187
Chadwick, Bruce A.	241	Nichols, Michael P.	121
Clement, David E.	11, 155	Orpen, Christopher	143, 151
Coan, Richard W.	161	Perry, Raymond P.	75, 95
Cotler, Sheldon	135	Prichard, Allyn	167-173
Dabbs, James M.	269	Quilty, Robert F.	135
Day, Robert C.	241	Rawls, Donna J.	261
Delaney, James G.	291	Rawls, James R.	261
Denmark, Florence L.	3, 69	Ray, J. J.	319
Deregowski, Jan. B.	311	Rayman, Barbara B.	181
Dobyne, Zipporah P.	161	Rayman, Jack R.	181
Dyson, James W.	29	Riddell, Jeanne C.	227
Fleitas, Daniel W.	29	Riley, Robert T.	3
Fodor, Eugene M.	257	Ritter, Brunhilde	69
Goldman, Morton	321	Rodda, William C.	313
Gordon, Leonard V.	55	Rookledge, Q.	151
Gordon, Thomas P.	121	Rotter, George S.	211
Graf, Richard G.	227	Ryckman, Richard M.	313
Greer, Steven	175	Schneider, Frank W.	291
Grobler, Elise	147	Scinto, Daniel L.	155
Guthrie, George M.	299	Scioli, Frank P., Jr.	29
Hamid, Paul N.	279	Sen, Subrata K.	45
Hanson, Richard W.	161	Shirk, Ethel J.	3
Hare, Rachel T.	219	Simon, Gottlieb C.	315
Helmreich, Robert L.	269	Sistrunk, Frank	11, 155
Howell, Robert J.	317	Sutton, A. J.	319
Izzett, Richard R.	81	Swanson, Blair R.	317
Johnson, Homer H.	81	Tager, Ronna	111
Jones, Stephen C.	111	Trego, Ronald E.	261
Kanekar, Suresh	309	Ulman, Jerome D.	11
Kang, Tai S.	159	Vance, Forrest L.	23
Keasey, Charles Blake	157	Viljoen, Henning G.	147
Kilty, Keith M.	251	Wieman, Robert J.	299
Kruger, Sara Finn	205	Witt, Robert E.	45
Kroes, William H.	205	Wolfe, Raymond N.	213

TABLE OF CONTENTS

The effect of ethnic and social class variables on semantic differential performances	3
BY FLORENCE L. DENMARK, ETHEL J. SHIRK, AND ROBERT T. RILEY	
Effect of reinforcement magnitude on nonconformity	11
BY FRANK SISTRUNK, DAVID E. CLEMENT, AND JEROME D. ULMAN	
Interpersonal performance and placement interview decisions	23
BY RALPH BAROCAS AND FORREST L. VANCE	
The interaction of leadership, personality, and decisional environment	29
BY JAMES W. DYSON, DANIEL W. FLEITAS, AND FRANK P. SCIOLI, JR.	
Cognitive complexity and group performance	35
BY TERENCE R. MITCHELL	
Conformity influence in small groups: A probabilistic measure	45
BY ROBERT E. WITT AND SUBRATA K. SAM	
A typological assessment of "A Study of Values" by Q-methodology	55
BY LEONARD V. GORDON	
Differential cognitive dissonance and decision latency	69
BY FLORENCE L. DENMARK AND BRUNHILDE RITTER	
Quantitative information differences between object-person presentation methods	75
BY J. EDWIN BOYD AND RAYMOND P. PERRY	
The effects of source identification on attitude change as a function of the type of communication	81
BY HOMER H. JOHNSON AND RICHARD R. IZZETT	
Four-person group concept attainment as a function of interaction format	89
BY RICHARD P. MCGLYNN	
Communicating impressions of people: A methodological study of person perception	95
BY RAYMOND P. PERRY AND J. EDWIN BOYD	
The effects of connotative meaning on the learning of names	105
BY JAMES L. BRUNING	
Exposure to others, need for social approval, and reactions to agreement and disagreement from others	111
BY STEPHEN C. JONES AND RONNA TAGER	
Development and validation of the Life Style Questionnaire	121
BY MICHAEL P. NICHOLS, THOMAS P. GORDON, AND MURRAY D. LEVINE	
Consistency among attitudes, beliefs, and behavior	127
BY WILLIAM H. BRAUVOLD	
Help-seeking behavior in a task-oriented dyadic interaction	135
BY SHELTON COTLER AND ROBERT F. QUERTY	

CROSS-CULTURAL NOTES

- The effect of race and similar attitudes on interpersonal attraction among white Rhodesians 143
 BY CHRISTOPHER ORPEN
- A comparison between the moral codes of American, Korean, and a group of Afrikaans-speaking South African students 147
 BY HENNING G. VILJOEN AND ELISE GROBLER

REPLICATIONS AND REFINEMENTS

- Dogmatism and prejudice in white South Africa 151
 BY CHRISTOPHER ORPEN AND QUENTIN ROOKLEDGE
- Effect of the magnitude of reward upon cooperative game behavior . . . 155
 BY DANIEL L. SCINTO, FRANK SISTRUNK, AND DAVID E. CLEMENT

CURRENT PROBLEMS AND RESOLUTIONS

- The lack of sex differences in the moral judgments of preadolescents . . 157
 BY CHARLES BLAKE KEASEY
- Name and group identification 159
 BY TAI S. KANG
- The development of some factored scales of general beliefs 161
 BY RICHARD W. COAN, RICHARD W. HANSON, AND ZIPPORAH P. DOBYNS

BOOKS RECENTLY RECEIVED 163

- A comparison of the structure of behavioral maturity between Japanese and American primary-grade children 167
 BY ALLYN PRICHARD, W. L. BASHAW, AND HARRY E. ANDERSON, JR.
- "Black suicide": A report of 25 English cases and controls 175
 BY CHRISTOPHER BAGLEY AND STEVEN GREER
- Children's judgments of age in Sarawak 181
 BY WILLIAM R. LOOFF, JACK R. RAYMAN, AND BARBARA B. RAYMAN
- An improved definition, from 10 researches, of second order personality factors in Q data (with cross-cultural checks) 187
 BY RAYMOND B. CATTILL AND K. ERNEST NICHOLS
- Child-rearing attitudes of Chinese, Jewish, and Protestant mothers . . . 205
 BY SARA FINN KRIGER AND WILLIAM H. KROES
- Attitudinal points of agreement and disagreement 211
 BY GEORGE S. ROTTER
- Authoritarianism, creativity, success, and failure among adolescents . . 219
 BY RACHEL T. HARR
- Helping behavior as a function of interpersonal perception 227
 BY RICHARD G. GRAF AND JEANNE C. RIDDELL
- Effects of economic threat on anomia and perceived locus of control . . . 233
 BY RAYMOND N. WOLFE

Responses to persistent social interference: A response hierarchy of influence tactics in social exchange	241
By BRUCE A. CHADWICK AND ROBERT C. DAY	
Deviancy and choice in cooperative and punishment situations	247
By KNUD S. LARSEN	
Attitudinal affect and behavioral intentions	251
By KRITH M. KILTY	
Delinquency and susceptibility to social influence among adolescents as a function of level of moral development	257
By EUGENE M. FODOR	
Personal space as a predictor of performance under close working conditions	261
By JAMES R. RAWLS, RONALD E. TREBO, CHARLES N. MCGAFFEY, AND DONNA J. RAWLS	
Fear, anxiety, and affiliation following a role-played accident	269
By JAMES M. DABBS, JR. AND ROBERT L. HELMREICH	
Some effects of dress cues on observational accuracy, a perceptual estimate, and impression formation	279
By PAUL N. HAMID	
Effect of individual achievement motivation on group problem-solving efficiency	291
By FRANK W. SCHNEIDER AND JAMES G. DELANEY	
The effects of age and cultural familiarity on children's categorization responses	299
By ROBERT J. WIEMAN AND GEORGE M. GUTHRIE	
CROSS-CULTURAL NOTES	
Intelligence, extraversion, and neuroticism in relation to season of birth	309
By SURESH KANAKAR AND SUMITRA MUKERJEE	
Drawing ability of Soli rural children: A note	311
By JAN B. DERGOWSKI	
REPLICATIONS AND REFINEMENTS	
Conformity in college men and women as a function of locus of control and prior group support	313
By RICHARD M. RYCKMAN AND WILLIAM C. RUDOLPH	
The factorial invariance of attitudes toward people (ATP)	315
By GOTTLIEB C. SIMON	
The relationship between specific psychology classes and maladjustment—A replication study	317
By BLAIR R. SWANMIN AND ROBERT J. HOWELL	
CURRENT PROBLEMS AND RESOLUTIONS	
Alienation in an Australian university	319
By J. J. RAY AND A. J. SUTTON	
Effects of involvement on petition signing	321
By MORTON GOLDMAN	
BOOKS RECENTLY RECEIVED	323



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American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
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Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
Educational	<i>Educ.</i>	School	<i>Sch.</i>
Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
International	<i>Internat.</i>	University	<i>Univ</i>
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3. The growth and decline of intelligence: A study of a homogeneous group between the ages of ten and sixty—H. E. JONES AND H. S. CONRAD
4. The relation between the complexity of the habit to be acquired and the form of the learning curve in young children—M. L. MATTHEW
5. Eating habits in relation to personality development of two- and three-year-old children: A study of sixty-nine children in two nursery schools—A. A. ELIOT
6. Coordinating mechanisms of the spinal cord—O. C. INGERSLEV

Genetic Psychology Monographs (continued)

VOLUME 14—July-December, 1933

1. Mental growth during the first three years: A developmental study of sixty-one children by repeated tests—N. BAYLEY
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4. Development of behavior in the fetal cat—J. D. CONNORS
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6. The effect of early and delayed practice on memory and motor performances studied by the method of co-twin control—J. R. HIGGINS

VOLUME 15—January-June, 1934

1. Studies in the psychology of tone and music—P. R. FARNSWORTH
2. Motor learning of children in equilibrium in relation to nutrition—E. L. BEER
3. Discrimination limits of pattern and size in the goldfish *Carassius auratus*—J. B. ROWLEY
4. Limits of learning ability in the white rat and the guinea pig—B. F. RIESS
- 5 & 6. The limits of learning ability in rhesus monkeys—H. A. FJELD

VOLUME 16—July-December, 1934

1. A statistical study of ratings on the California Behavior Inventory for Nursery-School Children—H. S. CONRAD
2. An eye-movement study of objective examination questions—A. FRANDEN
3. An experimental study of constitutional types—O. KLINGER, S. E. ASCH, AND H. BLOCK
4. The development of a battery of objective group tests of manual laterality, with the results of their application to 1306 children—W. N. DUKOR
- 5 & 6. An experimental study in the prenatal guinea-pig of the origin and development of reflexes and patterns of behavior in relation to the stimulation of specific receptor areas during the period of active fetal life—L. CARMICHAEL

VOLUME 17—January-December, 1935

1. Organization of behavior in the albino rat—R. L. THORNDIKE
2. Brightness discrimination in the rhesus monkey—M. P. CRAWFORD
3. The limits of learning ability in cebus monkeys—A. M. KOCH
4. Nature-nurture and intelligence—A. M. LEAHY
5. On intelligence of epileptic children—E. B. SULLIVAN AND L. GARAGAN
6. A study of the play of children of preschool age by an unobserved observer—D. L. COCKERELL

VOLUME 18—January-December, 1936

1. Sex differences in variational tendency—Q. MCNEER AND L. M. TERMAN
2. The process of learning to dress among nursery-school children—C. B. KEY, M. R. WHITE, M. P. HONEIK, A. B. HEINEX, AND D. ERWIN
3. A study of the present social status of a group of adults, who, when they were in elementary schools, were classified as mentally deficient—W. R. BALLER
4. The influence of specific experience upon mental organizations—A. ANASTASI
- 5 & 6. Studies in aggressiveness—L. BENDES, S. KEISER, AND P. SCHILDER

VOLUME 19—January-December, 1937

1. Psychological bases of self-mutilation—C. DARROWSKI
- Masculine temperament and secondary sex characteristics: A study of the relationship between psychological and physical measures of masculinity—H. GELINSON
2. A psychological study of forty unmarried mothers—R. D. NOTTINGHAM
- Behavior problems in the children of psychotic and criminal parents—L. BENDER
3. Domination and integration in the social behavior of young children in an experimental play situation—H. H. ANDERSON
4. The sequential patterning of prone progression in the human infant—L. B. AMES

VOLUME 20—January-December, 1938

1. The relationship between characteristics of personality and physique in adolescents—P. S. DE Q. CAMOT
2. Behavior problems of elementary school children: A descriptive and comparative study—J. Y. MASTEN
- Graphic representation of a man by four-year-old children in nine prescribed drawing situations—P. F. GRADLEY
3. Differences between two groups of adult criminals—R. S. TOLMAN
4. A comparative study by means of the Rorschach method of personality development in twenty pairs of identical twins—E. THOMP
- Individual differences in the facial expressive behavior of preschool children: A study by the time-sampling method—C. SWAN

VOLUME 21—January-December, 1939

1. An experimental analysis of "level of aspiration"—R. GOULD
2. Some light on the problem of bilingualism as found from a study of the progress in mastery of English among preschool children of non-American ancestry in Hawaii—M. E. SMITH
3. Domination and social integration in the behavior of kindergarten children and teachers—H. H. ANDERSON
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4. The social-sex development of children—E. H. CAMPBELL

VOLUME 22—January-December, 1940

1. Measuring human relations: An introduction to the study of the interaction of individuals—E. D. CHAPPEL
2. Aggressive behavior in young children and children's attitudes toward aggression—M. D. FITE
3. Student attitudes toward religion—E. NELSON
- The prediction of the outcome-on-furlough of dementia praecox patients—J. S. JACOB
4. Significant characteristics of preschool children as located in the Conrad inventory—K. H. READ
- Learning by children at noon-meal in a nursery school: Ten "good" eaters and ten "poor" eaters—J. B. MCCAY, E. B. WARING, AND P. J. KAUSE

VOLUME 23—January-June, 1941

1. Studies in the interpretation of play: I. Clinical observation of play disruption in young children—E. H. ERIKSON
2. An analysis of certain variables in a developmental study of language—F. M. YOUNG
3. Infant development under conditions of restricted practice and of minimum social stimulation—W. DENNIS
4. An analysis of the mental factors of various age groups from nine to sixty—B. BALINSKY
5. Factors influencing performance on group and individual tests of intelligence: I. Rate of work—M. W. BENNETT
6. Individual differences in apperceptive reaction: A study of the response of preschool children to pictures—E. W. AMEN

VOLUME 24—July-December, 1941

1. Twins T and C from infancy to adolescence: A biogenetic study of individual differences by the method of co-twin control—A. GSKELL AND H. THOMPSON
2. Finger nail-biting: Its incidence, incidence, and amelioration—A. L. BILLIC
3. An experimental study of the factors of maturation and practice in the behavioral development of the embryo of the frog, *Rana pipiens*—A. FROMME
4. The Fels child behavior scales—T. W. RICHARDS AND M. P. SIMONS
5. Measurement of the size of general English vocabulary through the elementary grades and high school—M. K. SMITH
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VOLUME 25—January-June, 1942

1. A study of factors determining family size in a selected professional group—J. C. FLANAGAN
2. A genetic study of geometrical-optical illusions—A. WALTERS
3. Interpretation of behavior-ratings in terms of favorable and unfavorable deviations: A study of scores from the Read-Conrad Behavior Inventory—K. H. READ AND H. S. CONRAD
4. Are there any innate behavior tendencies?—J. B. SCHOELLAND
5. An investigation of the intelligibility of the speech of the deaf—C. V. HUBBARD AND F. C. NUMBERS

Genetic Psychology Monographs (continued)

VOLUME 26—July-December, 1942

1. The critical frequency limit for visual flicker in children between the ages of 6 and 15—V. L. MILLER
Some factors determining handedness in the white rat—K. L. WENTWORTH
2. Motivation and behavior—E. FRANKEL-BRUNSWIK

VOLUME 27—January-June, 1943

1. Comparison of children's personality traits, attitudes, and intelligence with parental occupation—N. R. MADOV
2. A comparative study of mental functioning patterns of problem and non-problem children seven, eight, and nine years of age—M. L. PIGNATELLI

VOLUME 28—July-December, 1943

1. Separation anxiety in young children: A study of hospital cases—H. EDELSTON
2. Correlates of vocational preferences—W. A. BRADLEY, JR.

VOLUME 29—January-June, 1944

1. Mental changes after bilateral prefrontal lobotomy—S. D. PORTKUS AND R. D. KEPNER
2. A twin-controlled experiment on the learning of auxiliary languages—B. PRICE, W. J. KOSTIN, AND W. M. TAYLOR

VOLUME 30—July-December, 1944

1. A method of administering and evaluating the thematic appreciation test in group situations—R. M. CLARK
2. A study of anxiety reactions in young children by means of a projective technique—R. TEMPLE AND E. W. AMEN

VOLUME 31—January-June, 1945

1. The evolution of intelligent behavior in rhesus monkeys—B. WEINSTEIN
2. Perceptual behavior of brain-injured, mentally defective children: An experimental study by means of the Rorschach technique—H. WEINER

VOLUME 32—July-December, 1945

1. A clinical study of sentiments: I.—H. A. MURRAY AND C. D. MORGAN
2. A clinical study of sentiments: II.—H. A. MURRAY AND C. D. MORGAN

VOLUME 33—January-June, 1946

1. Interpretation of spontaneous drawings and paintings—T. S. WARNER
Preferences for sex symbols and their personality correlates—K. FRANKEL
2. Outstanding traits in a selected college group, with some reference to career interests and war records—F. L. WELLS AND W. L. WOODS

VOLUME 34—July-December, 1946

1. The relation of emotional adjustment to intellectual function—J. L. DESPRAZ AND H. O. PIERCE
The smiling response: A contribution to the ontogenesis of social relations—R. A. SPITZ
2. Finger-painting and personality diagnosis—P. J. NAPOLI

VOLUME 35—January-June, 1947

1. The thematic apperception technique in the study of culture-personality relations—W. E. HENRY
2. A continuation study of anxiety reactions in young children by means of a projective technique—M. DORNEY AND E. W. AMEN
A study of the vocational interest trends of secondary school and college women—A. M. CAWLEY

VOLUME 36—July-December, 1947

1. Maze test validation and psychosurgery—S. D. PORTKUS AND H. N. PETRAS
2. The diagnostic implications of Rorschach's test in case studies of mental defectives—I. JOLLIE

VOLUME 37—January-June, 1948

1. The radio day time serial: A symbolic analysis—W. L. WARNER AND W. E. HENRY
The relation of personality characteristics and response to verbal approval in a learning task—G. I. GRACE
2. The mechanism of vision: XVIII. Effects of destroying the visual "associative areas" of the monkey—K. S. LADNITZ
A study of the relationship between handwriting and personality variables—P. CASTELNUOVA-TEDESCO

VOLUME 38—July-December, 1948

1. Modern language learning: The intensive course as sponsored by the United States Army, and implications for the undergraduate course of study—M. LUNA
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A study of the transmission of authority patterns in the family—H. L. INGERSOLL

VOLUME 39—January-June, 1949

1. A study of the psychoanalytic theory of psychosexual development—G. S. BLUM
The assessment of parental attitudes in relation to child adjustment—E. J. SHOREN, JR.
2. Qualitative differences in the vocabulary responses of normals and abnormals—H. FRIZEL
The relative effectiveness of motion and still pictures as stimuli for eliciting fantasy stories about adolescent-parent relationships—P. E. EISENBERG
The organization of hereditary maze-brightness and maze-dullness—L. V. SHARPLE

VOLUME 40—July-December, 1949

1. An experimental study of what young school children expect from their teachers—B. BIDER AND C. LEWIS
A study of the relative effects of age and of test difficulty upon factor patterns—H. A. CURTIS
A projective experiment using incomplete stories with multiple choice endings—J. K. SEATON
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Social perceptions and attitudes of children—M. RADKE, H. TRACER, AND H. DAVIS

VOLUME 41—January-June, 1950

1. Some psychological and educational aspects of pediatric practice: A study of well-baby clinics—L. H. BLUM
One-trial learning in the domestic rat—B. B. HUDSON
An introduction to the principles of scientific psychosynthesis—A. ELLIS
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The relationship between level of vocational aspiration and certain personal data: A study of some traits and influences bearing on the prestige level of vocational choice—J. STUBBINS

VOLUME 42—July-December, 1950

1. Personality patterns of suicidal mental hospital patients—N. L. FARBROW
Sex-role identification in young children in two diverse social groups—M. RABANAN
2. A study of the influence of the social field on individual behavior: As revealed in the expression of hostility and warmth by neurotics and paranoid schizophrenics in discussion group situations—D. SHAPIRO
An experimental study of avoidance—R. F. HEFFERLINE

VOLUME 43—January-June, 1951

1. A study of copying ability in children—E. A. TOWNSEND
Prestige motivation of gifted children—D. P. AUGER
2. A psychological study of physical scientists—A. ROE

VOLUME 44—July-December, 1951

1. The organization of hostility controls in various personality structures—S. FISHER AND E. HINDS
Children and radio: A study of listeners and non-listeners to various types of radio programs in terms of selected ability, attitude, and behavior measures—E. A. RICCIUTI
2. Quantitative expression in young children—W. E. MARTIN
The use of magnetic devices in the collection and analysis of the preverbal utterances of an infant—A. W. LYNN

VOLUME 45—January-June, 1952

1. Japanese-American personality and acculturation—W. CAUDILL
2. A statistical study of the Freudian theory of levels of psychosexual development—C. A. BARNES
Personality characteristics of selected disability groups—D. N. WIENER

Genetic Psychology Monographs (continued)

VOLUME 46—July-December, 1933

1. The relationship of social status, intelligence, and sex of ten- and eleven-year-old children to an awareness of poverty—F. J. ERYAN
An empirical study of the castration and Oedipus complexes—S. M. FELDMAN
2. The relationship between projective test scoring categories and activity preferences—M. M. SCHWARTZ
A comparison of formal and content factors in the diagnostic testing of schizophrenics—M. SHARMAN

VOLUME 47—January-June, 1933

1. Ability and accomplishment of persons earlier judged mentally deficient—D. C. CHARLES
Variations in the consistency of the behavioral meaning of personality test scores—M. KORNBERG
2. Some child-rearing antecedents of aggression and dependency in young children—R. R. SEARS, et al.
Symptom correlates for descriptive diagnosis—J. H. WITTENBORN, et al.

VOLUME 48—July-December, 1933

1. Age and mental abilities: A longitudinal study—W. A. OWENS, JR.
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Personality and physical disease: A test of the Dunbar hypothesis applied to diabetes mellitus and rheumatic fever—D. H. CROWELL
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A critical review of the stability of social acceptability scores obtained with the partial-rank-order and the paired comparison scales—S. A. WITKIN and C. G. THOMPSON
A study of the effects of color on Rorschach responses—C. G. BRADY

VOLUME 49—January-June, 1934

1. Factors underlying major reading disabilities at the college level—J. A. HOLMES
Parent behavior toward first and second children—J. K. LASKO
2. Social-status and intelligence: An experimental study of certain cultural determinants of measured intelligence—E. A. HAGGARD
Certain determinants and correlates of authoritarianism—S. STANLEY
Personalities in faces: I. An experiment in social perceiving—P. F. SECORD, W. F. DUKES, and W. DEYAN

VOLUME 50—July-December, 1934

1. A study of the relationship between play patterns and anxiety in young children—E. W. AMEN and N. REINSON
Operational exploration of the conceptual self system and of the interaction between frames of reference—M. EADSON and A. E. JONES
Problem solving: A statistical description of some relationships between organismic factors and selected response measures—N. A. FATTU, E. KAPOV, and E. V. MECH
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The import for clinical psychology of the use of tests derived from theories about infantile sexuality and adult character—D. W. MILLS
Measuring personality in developmental terms: The Personal Preference Scale—M. H. KROUT and J. K. TATUM

VOLUME 51—January-June, 1935

1. Some relations between techniques of feeding and training during infancy and certain behavior in childhood—A. BERNSTEIN
The expression of personality in drawings and paintings—L. H. STEWART
2. Negative stereotypes concerning Americans among American-born children receiving various types of minority-group education—J. A. FISHMAN
The Lincoln-Oseretsky Motor Development Scale—W. STOLAN

VOLUME 52—July-December, 1935

1. Some personality correlates of sex, sibling position, and sex of sibling among five- and six-year-old children—H. L. KOCH
A quantitative Rorschach assessment of maladjustment and rigidity in acculturating Japanese Americans—C. DeVOS
Measurement of authoritarianism and its relation to teachers' classroom behavior—H. M. MCGEE
2. The formal aspects of schizophrenic verbal communication—R. MARR
A study in an aspect of concept formation, with subnormal, average, and superior adolescents—H. N. HOFFMAN
Traumatic avoidance learning: Acquisition and extinction in dogs deprived of normal peripheral autonomic function—L. C. WYNNE and R. L. SOLOMON

VOLUME 53—January-June, 1936

1. As the psychiatrist aide sees his work and problems—F. L. WELLS, M. GREENGLASS, and R. W. HYDE
An investigation of avoidance, anxiety, and escape behavior in human subjects as measured by action potentials in muscle—J. D. BROTHMAN
Spread of effect: A critical review—M. H. MARX
2. Stress, fantasy, and schizophrenia: A study of the adaptive processes—O. J. B. KENNEDY
The attitude structure of the individual: A Q-study of the educational attitudes of professors and laymen—F. N. KERLINGER

VOLUME 54—July-December, 1936

1. A study of personality differences between middle and lower class adolescents: The Sound Test in culture-personality research—L. RAINWATER
The assessment of parental identification—S. W. GRAY and R. KLADO
The influence of social context on impulse and control tendencies in preadolescents—C. H. ZIM
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A method for the comparison of groups: A study in thematic apperception—L. C. SCRAW and W. F. HENRY

VOLUME 55—January-June, 1937

1. Academic performance and personality adjustments of highly intelligent college students—R. M. HODGKINS
The use of the Vineland Social Maturity Scale in the planning of an educational program for non-institutionalized low-grade mentally deficient children—M. C. GORTCHER
The structure and origin of the oral character—H. BUNNEY
Free expression of adolescents' interests—M. AMATOS
The role of mass media and the effect of aggressive film content upon children's aggressive responses and identification choices—R. S. ALBERT
2. Interest in persons as an aspect of sex difference in the early years—E. W. COHENSON

VOLUME 56—July-December, 1937

1. Some stable response determinants of perception, thinking, and learning: A study based on the analysis of a single test—M. L. SIMMEL and S. COUNTS
Potentials of age: An exploratory field study—S. L. PERRY
2. Tactile communication—L. K. FRANK
The use of a filmed puppet show as a group projective technique for children—M. R. HANCOCK
The social competence of middle-aged people—R. J. HAVENHAW

VOLUME 57—January-June, 1938

1. Psychological and cultural problems in mental subnormality: A review of research—S. B. SARASON and T. CLARKE
Developmental aspects of discrimination in relation to adjustment—P. LONDON
Muscular tension as a response to psychological stress in rheumatoid arthritis and peptic ulcer—J. A. SOUTHWORTH
2. Frustration: Theory and experiment—R. LAWSON and M. H. MARR

VOLUME 58—July-December, 1938

1. Emotional aspects of political behavior: The woman voter—E. M. BENNETT and E. M. COHENSON
The accuracy of self estimates: A measure of self-concept reality—R. M. HANCOCK
Personality factors in social mobility: A study of occupationally mobile businessmen—J. C. ANDERSON
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Some factors related to the choice-status of ninety eighth-grade children in a school society—D. EKLUND
Some relationships between fantasy and self-report behavior—R. C. CALDERAS

Genetic Psychology Monographs (continued)

VOLUME 59—January-June, 1959

1. Freshman Rorschachs and college performance—G. R. SCHMEIDLER, M. J. NELSON, AND M. BRISTOL
Perceptual aspects of attributed movement—R. W. COAN
Men and women: Personality patterns and contrasts—E. M. BENNETT AND L. R. COHEN
2. Personality factors in mothers of cerebral palsied children—G. BOLES
Separatism and integrationism: A social-psychological analysis of editorial content in New York newspapers of three
American minority groups—J. A. FISHMAN AND G. S. FISHMAN
Self, role, and satisfaction—A. L. BROPHY

VOLUME 60—July-December, 1959

1. The constancy of personality ratings over two decades—R. D. TUDENHAM
Mother-son identification and vocational interest—L. H. STEWART
A study of mother-child relationships in the emotional disorders of children—M. J. ROSENTHAL, M. FINKELSTEIN, L. NI, AND R. E. ROBERTSON
On the trail of the wolf-children—W. F. OGBURN AND N. K. BOSE
2. Measuring the mental health of normal adults—R. F. PECK
Parental identification in young children—W. EMMERICH
The problems of Jewish religious youth—B. M. LEVINSON

VOLUME 61—January-June, 1960

1. Identifying socially maladjusted school children—A. A. ADAMS
Social interaction in an interracial nursery school—H. W. STEVENSON AND N. C. STEVENSON, *et al.*
Interests of pre-adolescent boys and girls—M. AMATORA
Educational and sex differences in the organization of abilities in technical and academic students in Colombia, South America—J. F. FIELLA
2. Some themes in the personalities of German men—L. RAINWATER
Right-left gradients in body image, body reactivity, and perception—S. FISHER
Longitudinal survey of child Rorschach responses: Younger subjects two to 10 years—L. B. AMES
Personality patterns related to occupational roles—M. SIEGELMAN AND R. F. PECK

VOLUME 62—July-December, 1960

1. The reading process: A descriptive, interdisciplinary approach—M. P. LANGMAN
Reactions to stress as a function of the level of intelligence—S. M. H. ZAIDI
Rorschach diagnosis by a systematic combining of content, thought process, and determinant scales—P. A. BOWEN, R. TESTIN, AND A. ROBERTS
Longitudinal survey of child Rorschach responses: Older subjects aged 10 to 16 years—L. B. AMES
2. Twenty years of shock therapy in America, 1937-1956: An annotated bibliography—N. H. PRONKO, R. SITTERLY, AND K. BERG
The quantitative analysis of parent behavior toward psychotic children and their siblings—E. M. DONNELLY

VOLUME 63—January-June, 1961

1. Make a sentence test: An approach to objective scoring of sentence completions—E. F. BORGATTA
Some aspects of the relationship between perception and motility in children—E. P. ROTHMAN
Some psychophysical aspects of mental illness in children—P. H. BERKOWITZ
Conceptual thinking in schizophrenic children—C. FRIEDMAN
2. Some maternal influences on children's personality and character—J. C. FINNEY
A study of concept formation in normals, mental defectives, and brain-damaged adults—R. W. ZASLOW
An investigation of trait relationships among six-year-old children—S. A. AVARIAN

VOLUME 64—July-December, 1961

1. Coping patterns of preschool children in response to intelligence test demands—A. MORIARTY
Studies of individual and paired interactional problem-solving behavior of rats: II. Solitary and social controls—A. BARON AND R. A. LITTMAN
2. Studies of role performance—J. H. MANN
A psychological assessment of professional actors and related professions—R. TAFT
A cross-cultural study of menstrual taboos—W. N. STEPHENS
The biological roots of creativity—H. GUTMAN

VOLUME 65—January-June, 1962

1. A Rorschach study of the development of personality structure in white and Negro children in a Southeastern community—A. C. PRICE
Measuring personality patterns of women—J. LORVINGER
Home interests in early adolescence—M. AMATORA
Social and emotional adjustment during adolescence as related to the development of psychosomatic illness in adulthood—L. H. STEWART
2. A systematic study of interaction process scores, peer and self-assessments, personality and other variables—E. F. BORGATTA
Children's conceptions of the content and functions of the human body—E. GELLERT

VOLUME 66—July-December, 1962

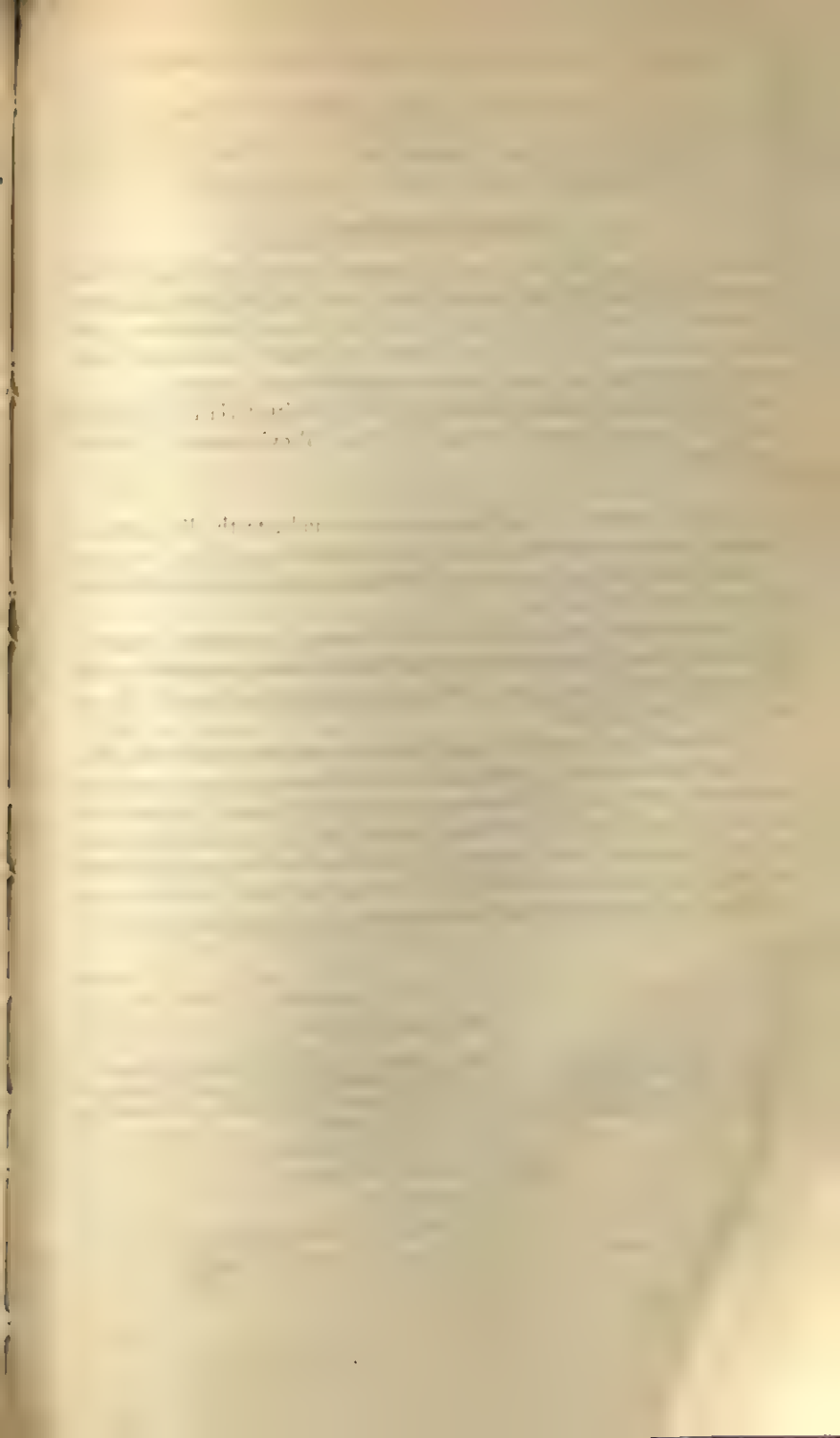
1. Ocular-manual laterality and perceptual rotation of literal symbols—I. FLEISCHER
Parental child-rearing attitudes and their correlates in adolescent hostility—S. B. CHOROST
Some explorations into the nature of anxieties relating to illness—P. R. ROBBINS
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2. Teaching a two-year-old to read: An experiment in early childhood learning—W. FOWLER
Achievement gains or losses during the academic year and over the summer vacation period: A study of trends in achievement by sex and grade level among students of average intelligence—K. M. PARLEY, JR., AND M. POWELL

VOLUME 67—January-June, 1963

1. Verbatim dialogue of a mother and child in therapy—C. E. MOUSTAKAS
A study of self-concept: Delinquent boys' accuracy in selected self-evaluations—W. E. AMOS
An integrating study of the factor structure of adult attitude-interests—R. B. CATTALL AND J. HORN
Social factors in mental disorders: A contribution to the etiology of mental illness—W. G. COBLINER
2. Conceptual preferences associated with choice of quantitative and nonquantitative college majors—J. GILBERT
A study of the concept of the feminine role of 51 middle-class American families—A. STRINMANN

VOLUME 68—July-December, 1963

1. Brain dynamism as reflected in illusions—G. K. YACOWYNSKI
The nature and measurement of components of motivation—R. B. CATTALL, J. A. RADCLIFFE, AND A. B. SWENET
2. Sharing in preschool children as a function of amount and type of reinforcement—W. F. FISHER
The Gesell Incomplete Man Test as a measure of developmental status—L. B. AMES AND F. L. ILC
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(Manuscripts are printed in the order of final acceptance)

- The effect of examiner ethnicity and language on the performance of bilingual
Mexican-American first graders 1
By ANGELA B. GARCIA AND BARRY J. ZIMMERMAN
- The value orientations of Guatemalan subsistence farmers: Measurement and
implications 13
By ALLEN A. ADINOLFI AND ROBERT E. KIRSH
- Personality and esthetic sensitivity in an Islamic culture 21
By MAH PRAYIN ANWAR AND IRVIN L. CHILD
- Likelihood of escape, likelihood of danger, and panic behavior 29
By SHARON GUTEN AND VERNON L. ALLEN
- Balance effects in image formation 37
By EDWARD B. BLANCHARD, MARILENE VICEDA, AND KATHA C. PONS
- The construction of an instrument to measure American sociopolitical values 41
By B. J. ALLEN, JR.

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The etiology of gender identity and the Lesbian	51
BY KENNETH POOLE	
The personality and attitudes of working-class British Communists and Fascists	59
BY H. J. EYSENCK AND THELMA T. COULTER	
"The apparel oft proclaims the man": Cooperation with deviant and conventional youths	75
BY BETH J. RAYMOND AND RHODA K. UNGER	
The effects of utility of information and intent on interpersonal esteem	83
BY ABRAHAM S. ROSS AND PAULINE WILSON	
Reciprocity for harm done	89
BY BOB HELM, THOMAS V. BONOMA, AND JAMES T. TEDESCHI	
Group cohesiveness, productivity, and strength of formal leadership	99
BY JOHN E. STINSON AND E. T. HELLEBRANDT	
Preferences among alternative forms of equity: The apportionment of coalition reward in the males and females	107
BY MAHMOUD A. WAHBA	
Attitude change as a function of perceived arousal	117
BY IRWIN A. HOROWITZ	
Multidimensional judgment scaling of well-known political figures	127
BY LEROY A. STONE AND GARY J. COLES	
CROSS-CULTURAL NOTES	
Administration of reward and punishment in relation to ability, effort, and performance	139
BY H. S. ESWARA	
Patience, and gratification preferences among Ugandan school children	141
BY MALLORY WOBER AND FRED MUSOKE-MUTANDA	
Perception of visual illusions in a sample of Afghan boys	143
BY JACOB E. HAUTALUOMA AND ROSS J. LOOMIS	
Identification processes among change agents in technical schools of Afghanistan	145
BY LUTZ H. ECKENBERGER AND GUNTER SCHNEIDER	
REPLICATIONS AND REFINEMENTS	
A developmental study of relationships between birth order and leadership style for two distinctly different American groups	147
BY ROBERT C. HARDY	
Opinion change as a function of the race of the experimenter, the communication source, and the subject	149
BY SALVATORE E. CURTO AND FRANK SISTRUNK	
Verbal conditioning of "aware" subjects	151
BY R. BOB SMITH III, BOB HELM, AND JAMES T. TEDESCHI	
Cultural dimensions related to parental verbalization and self-concept in the child	153
BY THOMAS MILLER	
Test anxiety, sex, and ordinal position	155
BY ARLINE L. BRONZAIT AND GILDA F. EPSTEIN	
CURRENT PROBLEMS AND RESOLUTIONS	
Locus of control and attitudes toward women's liberation in a college population	157
BY RICHARD M. RYCKMAN, JANET L. MARTENS, WILLIAM C. RODDA, AND MARTIN F. SHERMAN	
Machiavellianism and political behavior	159
BY DAVID L. COLE	
Masculinity-femininity and conformity	161
BY FRANK SISTRUNK	
BOOKS RECENTLY RECEIVED	163

THE EFFECT OF EXAMINER ETHNICITY AND LANGUAGE ON THE PERFORMANCE OF BILINGUAL MEXICAN-AMERICAN FIRST GRADERS*¹

University of Arizona and Arizona Center for Early Childhood Education

ANGELA B. GARCIA AND BARRY J. ZIMMERMAN

A. INTRODUCTION

Mexican-Americans comprise one of the largest minority groups in the United States and the vast majority of them leave school before completing their formal education (21). In 1960, the median schooling for Mexican-American males throughout the Southwest was 8.1 years compared with 11.8 years for Anglos (11). A survey of Mexican-American families with children in poverty area schools of Tucson, Arizona, revealed that the mean level of schooling for parents in the sample was 7.7 years, with only 11 percent having completed high school (29).

In another investigation of Mexican-American children in Tucson, Henderson (13, p. 3) reported that by junior high school, the cumulative records of these students "indicate that the performance gap between low achievement and school ability grows larger as the children progress through school." Clearly the inability of schools to develop academic skills of many Mexican-American students successfully or even to motivate them to stay in the school milieu demands attention.

The cumulative deficit mentioned by Henderson has also been found to be characteristic of children of other economically deprived groups (7). The inability of the disadvantaged child to profit from traditional school programs

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has prompted investigations of cognitive and motivational properties of conventional pedagogical practice. The present study focuses on variables influencing the motivation of Mexican-American children.

In discussing the lack of motivation that seemed to afflict many low socioeconomic students, Meacham and Wiesen (22) have found that these children tend not to respond to social reinforcement, such as teacher approval or praise. Gray and Klaus's (12) study offers partial explanation for this finding; they suggested that the disadvantaged child received less reinforcement for his behavior from adults, and the reinforcement was probably not verbal. It has been found (27, 30) that disadvantaged children were not as responsive to verbal reinforcement or simple knowledge of results as they were to material reinforcers. In these studies, however, little attention was directed at the influence of the praise agent's ethnicity on the reinforcing value of his praise.

Reviews of the literature in the area of physical and personal characteristics of *E* indicate that ethnicity was of primary importance, particularly for the performance of young children on simple tasks (23, 24). Zigler and associates (3, 4, 19, 20) have proposed a valence explanation for an adult's social reinforcer effectiveness which permits consideration of the adult's ethnicity as a discriminable cue bearing on the motivational properties of his praise. However, not one of the studies in the above reviews investigated the effect of *E*'s race with Mexican-American children.

In discussing Mexican-American ethnicity, many Mexican-Americans and social scientists (6, 9, 18, 29) considered language (the use of Spanish) as important as physical characteristics. Barker (2) and Yoshino *et al.* (29) have found that Spanish was identified in the Mexican-American community as the language of intimate and family relations, while the use of English became more prevalent as social distance increased.

There is an extensive body of experimental and descriptive research on the affective properties of language (e.g., 8, 25). Baldwin (1) and Carroll (5) suggested that the affective properties of language which are acquired very early in a child's development may gain their positive value through association with primary reinforcers dispensed by the caretaker. The positive valence associated with the primary language has many affective manifestations. It is generally agreed (10, 14, 16, 17) that people develop a powerful involvement with the language first learned.

There is recent evidence (29) that the primary language of the Mexican-American children in the Tucson sample was Spanish. It was found that 45 percent of the Mexican-American mothers spoke to their children solely in Spanish; only 12 percent talked to their children exclusively in English. Thus

as many as 88 percent of these entering first grade children may respond to English as a second language.

The above investigations suggest hypotheses regarding the motivating effects of adult ethnicity and language on the task performance of poor Mexican-American youngsters. It was hypothesized that praise from a Mexican-American adult would be more reinforcing to a Mexican-American child than that from an Anglo adult. Further, it was hypothesized that praise in Spanish would be more reinforcing to a Mexican-American child than praise delivered in English.

B. METHOD

1. Subjects

From the first grade of an elementary school located in an economically depressed area of Tucson, Arizona, a sample of 20 male and 20 female bilingual Mexican-American children was randomly drawn and assigned to one of the experimental conditions. The school was receiving aid under the Federal Follow Through Program. School records and teacher reports indicated that 94 percent of the first graders were bilingual Mexican-Americans. The selected *Ss* ranged in age from 6.2 to 7.8 years with a mean age of 6.8 years.

2. Examiners

Two female graduate students in their early twenties served as *Es* during the study. The Anglo *E*, of northern European extraction, was five feet two inches in height, with fair skin, brown hair, and light blue eyes. The Mexican-American *E*, of Mexican Indian-Spanish ancestry, was also five feet two inches tall, with olive skin, black hair, and dark brown eyes. The Anglo *E* had taken three years of college level Spanish and had spoken it occasionally during the previous two years in which she had lived in Tucson. The Mexican-American *E*, who grew up in Tucson, was a native speaker of Spanish and had studied it for four years in college. After intensive practice prior to and during the study, the pronunciation and delivery of the instructions and praise were judged comparable by an independent group of bilingual Mexican-American graduate students.

3. Apparatus and Task

In reviewing studies of the motivational influence of social reinforcement, Stevenson (26) suggested the following task requisites for this type of research: "dull, apparently endless, requires minimal prior learning, has no clear

criteria for adequate performance, and uses discrete response" (p. 97). Accordingly bar pressing was selected as the task for this study.

The bar pressing apparatus was fashioned to resemble a clown's face. It was constructed from a one-gallon Hills Brothers coffee can with the red filigree pattern converted into a clown-faced bar press mechanism. A Vreder Rost electric counter wired to the tongue of the clown recorded the number of times *S* pressed the clown's tongue. Also connected to the tongue was a Giesbrand's Cumulative Recorder. One pen on the recorder graphically registered each *S*'s bar pressing response; a second pen was connected to an "event button" which *E* held in her hand and pressed to mark the beginning and end of each experimental phase, as well as to note any unusual occurrence.

The clown's head was taped four inches from the edge of a primary size table in an eight by 10 foot experimental room within a mobile trailer which was located on the school grounds. There was direct access to the experimental room through an outside door. The wires to the recorder and counter extended from the back of the clown through a hole in the wall to a separate control room where the counter and recorder were monitored by an adult graduate student. The control room was located immediately adjacent to the experimental room and was equipped with one-way glass to permit additional unobtrusive visual monitoring of *S*'s behavior. On *E*'s table directly behind *S* rested the event button, a copy of the instructions, a stopwatch, and the schedule of reinforcements.

4. Procedures

Each *S* was randomly assigned to one of four experimental groups; thus five male and five female *S*s served in each variation. Each *E* worked with two groups. Each *S* experienced two phases lasting three minutes each. During Phase One (*P*1), *E* praised *S* on a variable interval schedule. Phase Two (*P*2) consisted of a repetition of *P*1 with *E* praising *S* in the alternative language, i.e., if she praised him in Spanish during the previous phase, she praised him in English during this phase. To counterbalance any potential sequence effects of the praise language order for each *E*, one group was presented the English followed by Spanish (E-S) language order and the second group received the Spanish followed by English (S-E) order. Thus, each experimental group was praised by the Anglo or a Mexican-American *E* according to an E-S or a S-E language order.

E conducted the experimental session individually with each child. Each *E* followed detailed instructions governing her interactions with each *S* from the time they met in the classroom to the end of the experimental session. After

getting a child from class, each *R* would guide him to the child's teacher experimental room where the clown was located on the table. *R* guided *S* over to the table with the clown, asked him to sit down on a small chair placed in front of the clown, and gave him the following instructions in English: "This is where you will be playing your part of the game. Your part of the game will be pressing down on the clown's tongue like this." Whereupon *R* pressed the tongue exactly 10 times in 15 seconds. *R* thus modeled 10 presses and stressed the word *pressing* to insure that *S* perceived that the game was run *pressures*.

R explained that her part of the game would involve doing some work seated behind *S* with her back to him: "I'll play the game with you in a few minutes but before I do that I have to do some work. While you're waiting, you can play with the clown or rest or do anything you like."

While *S* familiarized himself with the apparatus and the situation, *R* sat at the table facing away from *S* doing paper work for three minutes. This seating arrangement forestalled any interaction between *R* and *S* precluding *R*'s inadvertent reinforcement of *S*'s behavior by her facial expressions or posture (28). Very few *S*s left their chair in order to interact with *R*; those who did were ignored.

At the beginning of P1, *R* looked over her shoulder saying: "It's time to begin the game. Do you remember what you're going to be doing? You will be pressing the tongue."

If the praise during P1 was to be in English *R* continued: "Are you ready? Start pressing now." If the instructions and praise were to be in Spanish, *R* said: "Ya se hora de comenzar. Te acordas lo que vas hacer? Vas a presionar la lengua. Fíate lista (n) para comenzar? Comencemos splendid ya." *R* then praised *S* on an increasing variable schedule.

After P1, *R* stopped *S* for 10 seconds. *R* then initiated P2 by instructing *S* in the alternative language to begin pressing again. *R* began pressing again on the same schedule but in the second language. P2 instructions were either new identical to those specified for P1. Following P2, *R* stopped *S* and then corrected him back to his classroom.

C. RESULTS

The rate of her pressing behavior was analyzed by a 2 x 2 x 2 factorial analysis of variance design (15) with the effects of ethnicity and language order being compared across phases or trials. Table 1 presents the mean number of responses and standard deviation for each phase under the four experimental conditions.

TABLE 1
MEAN NUMBER OF BAR PASSES PER REINFORCEMENT SESSION UNDER FOUR
EXPERIMENTAL CONDITIONS

Condition	Spanish (S)		English (E)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Mexican-American <i>E</i>				
S-E order	313.6	92.16	340	23.22
E-S order	316.7	116.36	275.6	151.57
Anglo <i>E</i>				
S-E order	222.8	148.27	301.3	196.97
E-S order	205.6	143.60	172.7	135.21

A significant main effect for ethnicity ($F = 4.77$, $df = 1/36$, $p < .05$) was found, with *Ss* praised by the Mexican-American *E* evincing higher levels of bar pressing ($M = 311.5$) than those praised by the Anglo *E* ($M = 225.6$). No other main effects attained significance.

The interaction of language order and praise language also proved significant ($F = 18.06$; $df = 1/36$, $p < .01$).

Turkey HSD tests (15) were used to analyze the components of this interaction. It was found that the Spanish praise first presentation was not significantly different from the Spanish praise second presentation; that is, *Ss* did not differ significantly in their response level when praised in Spanish before or after being praised in English. However, English praise when presented second was significantly more motivating than when English praise was presented initially ($p < .05$); that is, *Ss* demonstrated higher levels of response after they had been praised in Spanish than when initially praised in English. No other interactions among the variables attained significance.

D. DISCUSSION

It was found that *E* ethnicity was a much stronger determiner of bar pressing behavior than the language in which praise was given. The motivational effect of *E* ethnicity on the behavior of Mexican-American children in this study was consistent with ethnicity effects observed in studies conducted with other racial groups (23, 24). As predicted, bilingual Mexican-American children responded more to praise by a Mexican-American adult than they did to praise by an Anglo adult. The predicted main effect for language failed to attain significance.

While *Ss* were not affected by order when praised in Spanish, they pressed significantly more when praised in English after Spanish. Perhaps the most parsimonious explanation of this complex order by praise language interaction

is that when a Mexican-American child encountered an unfamiliar Spanish-speaking adult in a setting generally characterized by a high degree of social distance, the child attached increased valence to the adult who used the language that had been paired with the positive stimuli of home and nurturance. Then when *E* switched back to English, the usual language of the school setting, the motivating value of his English praise was significantly enhanced.

It is important to note that this finding of attenuated reinforcement value of adult verbal praise was drawn from an experimental setting where a Mexican-American child was individually tested by an unfamiliar adult. However, Zimmerman and Pike (31) have found similar results in a prototypic classroom setting. They used second grade Mexican-American children from the same school involved in the present investigation. It was found that although English praise delivered to small groups of these children by a familiar Anglo adult exerted some degree of reinforcing effects on their question-asking behavior, the unsystematic fluctuations observed in response rate suggested that praise (in English) alone may not be a sufficient reinforcer to optimize responding.

Other factors also delimit the generalizability of the ethnicity effects obtained in this study. These motivational effects were studied for only a brief time period; undoubtedly a longer time interval would yield more complicated results. Further, the child in the present sample were relatively homogeneous with regard to age, socioeconomic status, bilingual status, length of time in school, and reinforcement history with respect to teacher and school. Parameters of all these variables should be systematically explored to determine the generalizability of the present study results.

E. SUMMARY

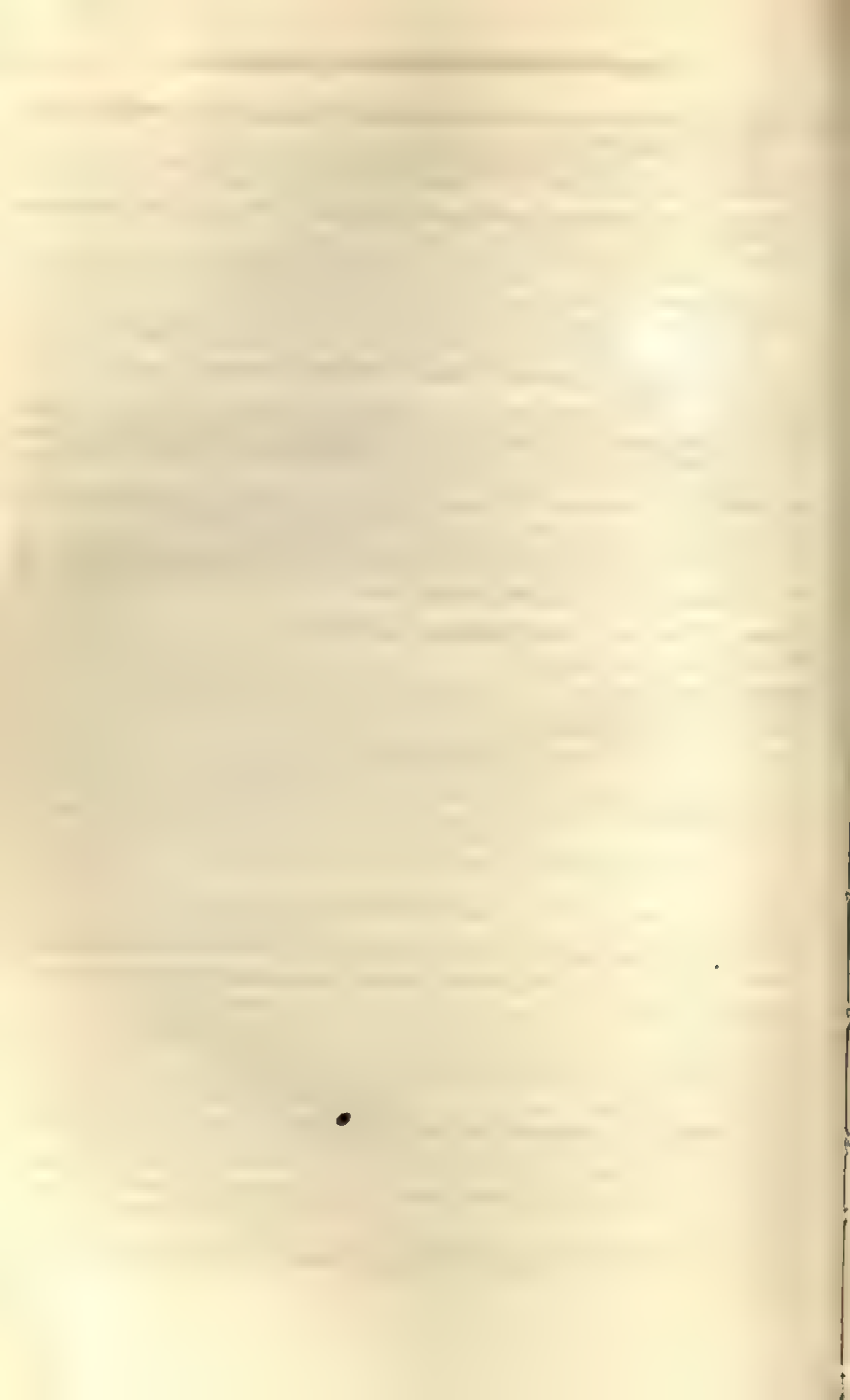
The influence of examiner ethnicity and language on the bar pressing behavior of 40 poor bilingual Mexican-American first graders was studied. An Anglo and a Mexican-American female examiner individually worked with two groups of children praising them in Spanish and then in English or the reverse language order during two experimental phases. The ethnicity main effect and order by language interaction attained significance. So praised by the Mexican-American examiner exhibited higher response levels than those praised by the Anglo examiner. While effectiveness of Spanish praise was not affected by order, that of English increased when dispensed after Spanish. Limitations of the study and implications for bilingual education were discussed.

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Arizona Center for Early Childhood Education
The University of Arizona
1515 East First Street
Tucson, Arizona 85719



THE VALUE ORIENTATIONS OF GUATEMALAN SUBSISTENCE FARMERS: MEASUREMENT AND IMPLICATIONS* 1 2

*Harvard University; and Human Development Division, Instituto de Nutrición
de Centro América y Panamá*

ALLEN A. ADINOLFI³ AND ROBERT E. KLEIN

A. INTRODUCTION

The study of values both intraculturally and crossculturally has a long, and, in our impression, distinguished history. Albert and Kluckhohn (1), for example, tell us that between 1920 and 1960, 1991 volumes and articles dealing with values were published, and interest in the area seems to be increasing—an impressive comment on the heuristic aspect of the value concept. However, while definitions of and classificatory systems for the values of various groups have proliferated, attempts to relate values to other important personal, social, and cultural phenomena have not kept pace with the importance attributed to values in the total functioning of the individual. It is the purpose of this paper to report an attempt to relate the value orientations of subsistence farmers from isolated rural communities in Guatemala to several important manifestations of successful coping behavior. It was our hypothesis that the value orientations of relatively successful, coping farmers would differ in interpretable ways from the value orientations of unsuccessful, poorly coping farmers.

B. METHOD

1. *Values Questionnaire*

The instrument used to assess the major value orientations of our subjects (Ss) was the Values Orientation Schedule used by the Harvard group in

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¹ The authors wish to express their appreciation for the contributions of Dr. Victor Mejía Pivaral in adapting the Values Orientation Schedule; Mr. Stephen Sellers in the constructing of the Coping Effectiveness Index, and Miss Maricella Ochoa in the data collection.

² This study was supported in part by Contract No. PH43-65-640 from the National Institute of Child Health and Human Development, the Bio-Medical Fund of the Department of Social Relations, Harvard University, and The Comparative International Program.

³ Requests for reprints should be sent to Allen A. Adinolfi, Ph.D., Lecturer on Clinical Psychology, Department of Social Relations, William James Hall, Harvard University.

their studies of cultures in the American Southwest. The complete schedule and a Spanish translation are published in the volume reporting the results of that study (2).

The rationale for the original study was based on C. Kluckhohn's assertion that all members in a cultural group, and in a sense the culture itself, must orient to one of a finite set of alternative modes of thinking and behaving to each of five pancultural, human problems. Given this rationale, the Harvard group developed a questionnaire designed to illustrate each of the problem dimensions concretely and to reflect an individual's choice amongst the range of alternative modes of response.

The original test is 22 items in length. Each item is a description of a situation and/or person. *S* indicates a preference for the person or one of several solutions to the situation. The items are designed to provide information as to the way in which the *S* would characteristically resolve four of the five pancultural questions considered by the Harvard group to underlie value orientations. These questions deal with man's relationship with other men, his relationship with nature, and his major time and activity dimensions. Man's relationship to other men may be either lineal, collateral, or individualistic; he may either feel subjected to, in some control of (over), or part of (with) nature; he may place most importance on the past, present, or future; he may stress activity and productive work (doing) or stress being at ease and doing what one wants (being).

The fifth major problem area, that of the basic nature of man, was not included either in our adaptation of the Schedule or in the original Schedule. Each of the problem areas and alternative resolutions represents major value orientations and is reflected in the items of the Values Orientation Schedule.

It was our original plan to use the Spanish translation of the test, without change, to assess the value orientations of our Spanish speaking Ladino *Ss*. We felt that if the test was successfully employed in the Spanish-American community in the American Southwest study and in a translated form with relatively isolated Navahoes, our Ladino *Ss* should have little difficulty comprehending the material.

Pretesting indicated that considerable adaptation would be necessary. We found our *Ss* were frequently unable to follow the lengthy descriptive situations or the two or three alternative responses comprising the original items. Additionally, when asked, as in the original format, for a second choice and the probable choice of others, our *Ss* seemed unable to respond meaningfully. Finally, the time required to complete the original test, administered in inter-

view form by a trained interviewer, took well over three hours, an unconscionable time burden for our hardworking Ladino Ss.

Consequently, on the basis of consultation with an experienced local anthropologist and extensive pretesting, we drastically curtailed and abbreviated the original translation. The form of the test used in this study, while retaining the essence of the descriptive situations and the alternative responses, is very much shortened and idiomatic for the area. Further, we asked only for the S's first choice of alternative responses, requesting him to respond by repeating the sense of the alternative rather than its ordinal position. We also eliminated questions asking S to guess the choice others of his group would have made.

These modifications were dictated by our recognition of the distortions in response patterns attendant upon excessive time impositions in testing situations and our choice of statistical techniques which do not rely on the complicated procedures used by the Harvard group.

2. Subjects

The study was conducted in a small village 58 kilometers northeast of Guatemala City in the plateau regions of that country. As in most rural villages of northeast Guatemala, the population of between 800 and 900 is culturally descended from the Spanish. Life style is fairly homogeneous, almost all male heads of households being small farmers who cultivate by hand the major crops of corn and beans. The Ss in the study were couples with children between 6-14 years of age, who had the nine highest and nine lowest overall ratings on the four variables of a sociopsychological index which, in total, we construe as a coping effectiveness index. The Coping Effectiveness Index was developed by ranking each household as above or below the median of total income (median: \$250), amount of land worked (median: 30,000 sq. varas), style of house (a median of 2 on a pooled 1-4 field rating judgment of the kitchen, dining area, bedrooms, and living area in accord with "local standard"), and literacy (one or both parents as literate was above the median, neither below). The four variables were scored by giving a 2 for being above the median and 0 below, yielding a potential range on the index of 0-8.

In our final sample we interviewed the man and woman in the highest and lowest ranked households that included children between 6-14. The mean total score of the low group on the Coping Effectiveness Index was .55 ($SD = .838$) and for the high group 5.77 ($SD = .628$). We restricted ourselves to households with children between 6-14 for purposes of another study in preparation which inquires into generational differences in values.

C. RESULTS

The data are presented in two parts: first a description of the value orientations of subsistence farmers in Guatemala and then the manner in which independently derived measures of coping behavior relate to individual differences within the general cultural pattern of value orientations.

Table 1 and Figure 1 present the value orientations of Guatemalan subsistence farmers. The results reveal that the major value orientations of these Ss reflect attitudes of being subjected to the whims of nature, a tendency to prefer individualism in interpersonal orientations, a primary focus on the present as opposed to the past or the future, and a marked stress on constructive activity.

It is important to note that in spite of the extensive revisions made on the original schedule, our data yield a pattern of group responses generally similar to that of the Spanish-American group in the Harvard study. This is encouraging in that one expects a certain consistency of value orientations concomitant with a similar cultural heritage. However, there is a major difference in value orientations between our Ladino Ss and the Spanish-American Ss in the original study with respect to values concerning work and leisure.

TABLE 1
VALUE ORIENTATIONS OF LADINO FARMERS

Value orientations	Total males (<i>N</i> = 18)	Group Total females (<i>N</i> = 18)
Relationship to time (5 items)		
Future	23 ^a	24
Present	62	53
Past	5	13
χ^2	29.91***	13.74**
Relationship to nature (5 items)		
Over	27	16
Subjected	51	50
With	12	24
χ^2	13.32**	9.92**
Relationship to other men (7 items)		
Lineal	15	18
Collateral	41	49
Individual	70	59
χ^2	19.80***	18.04**
Relationship to activity (6 items)		
Doing	87	84
Being	21	24
χ^2	22.24***	18.04***

^a Numbers in each cell are the frequency with which each orientation was endorsed.

** $p < .01$.

*** $p < .001$.

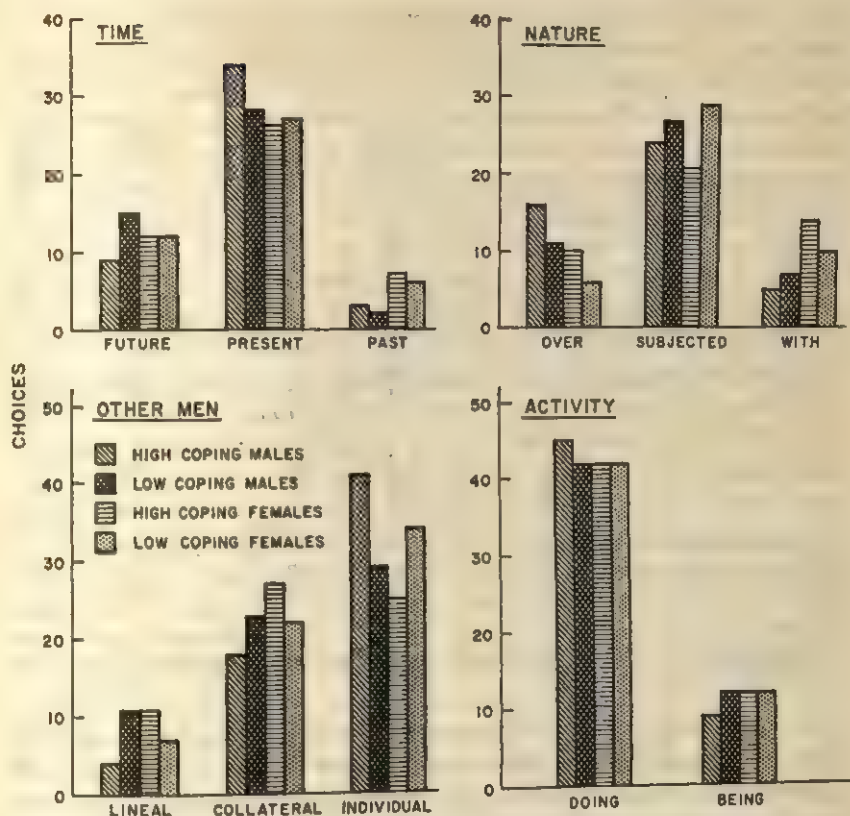


FIGURE 1
VALUE ORIENTATIONS OF LADINO FARMERS

Table 2 presents results pertinent to our second focal point, which relates an index of coping effectiveness to individual differences in value orientations. We find very little relationship between coping effectiveness and value orientation for the high and low coping female groups. In the male groups we note a significant relationship between coping effectiveness and orientation toward other men, with the high coping males expressing a more individualistic orientation than the low coping males. While they do not approach significant levels of relationship, a trend is apparent for the high coping males to choose alternatives that indicate a feeling of control over nature. One must be careful in placing too much stress on these trends. However, as one reviews the total table, the tendency for high coping males to differ from low coping males,

TABLE 2
COMPARISON OF VALUE ORIENTATIONS FOR
HIGH AND LOW COPING LADINO FARMERS

Value orientations	Group			
	Males High coping N = 9	Males Low coping N = 9	Females High coping N = 9	Females Low coping N = 9
Relationship to time (5 items)				
Future	8 ^a	15	12	12
Present	34	28	26	27
Past	3	2	7	6
χ^2		2.91		.71
Relationship to nature (5 items)				
Over	16	11	10	6
Subjected	24	27	21	29
With	5	7	14	10
χ^2		1.43		2.94
Relationship to other men (7 items)				
Lineal	4	11	11	7
Collateral	18	23	27	22
Individual	41	29	25	34
χ^2		5.93*		2.76
Relationship to activity (6 items)				
Doing	45	42	42	42
Being	9	12	12	12
χ^2		.23		0

^a Numbers in each cell are the frequency with which each orientation was endorsed.

* $p < .10$.

who, in turn, appear very similar to both female groups, is unmistakable. Thus, even though the total picture seems to show that the entire sample can be characterized as having major value orientations that include a concentration on the present, the importance of activity and doing constructive things, a subjugation to nature and stress on individualism, high coping males deviate somewhat from their low coping counterparts in interesting directions.

D. DISCUSSION

One of the interesting findings in the study is the similarity of value orientations in our sample of Guatemalan Ladino farmers and the Spanish-American sample in the Harvard study. We note the preference of value orientations in these two samples is different only in the dimension of doing *versus* being. Our Ladino sample shows a marked preference for doing constructive work at all times, whereas the Spanish-American sample indicates a preference for attaining leisure and being at ease.

The disparity in the activity dimension between these two samples deserves comment. In the Harvard study the dominant being orientation is interpreted

as a Spanish-American character trait which the authors of that study feel may change with progressive acculturation. Our interpretation is quite different. We are impressed by the absence of variance in the endorsement pattern of our sample on questions relating to this dimension. We are led to conclude that in the Ladino's world of subsistence farming, hard, constructive work is a life necessity requiring a generational transmission of a value system encouraging such activity. We see the endorsement patterns of the Spanish-American sample in New Mexico to be related indeed to problems of acculturation. However, we view the dominant being orientation to be the result of acculturation and not a pattern that will be modified by acculturation. That is, in its proximity to a dominant culture, different from its own, the Spanish-American sample can be viewed as a cultural group subjected to pressures of enforced dependency which, in turn, leads to an expressed preference to avoid self-generated, constructive activity.

Of particular interest in our data are the value orientations of the high coping males. While conforming to the preferred orientations of the group as a whole, the high coping males are more individualistic in orientation, and show a trend to endorse less often future time orientations than do their low coping counterparts. One might suggest that the future orientation in a culture whose members must often suffer the loss of food and loved ones through natural happenstance and disease could be interpreted as much as an escapist tendency as in a longing for the past and that the most effective way of dealing with one's problems is to adopt a pragmatic day-to-day approach. Similarly, in the relationship to nature category, the high coping males show a trend to endorse items suggestive of a feeling that at times nature can be controlled; again, possibly a tendency in that group to take a more efficacious stand in their confrontation with their environment.

In summary, while the results present us with a fairly clear picture of the preferred value orientations of this Ladino population as relatively homogeneous, there are trends indicative of a more pragmatic, down-to-earth, efficacious viewpoint in the high coping males. The findings, while certainly not definitive, are encouraging and suggest that the way in which one views the world, on what one places importance, may be related to the effectiveness with which one copes with his environment.

E. SUMMARY

An adaptation of the Values Orientation Schedule (2) was used to assess the values of a sample of Guatemalan subsistence farmers. The subjects were chosen on the basis of scores on a Coping Effectiveness Index, with the man and

woman in the nine highest scoring and nine lowest scoring households in the sample village comprising the subjects. Results are presented which reflect both the major value orientations of these subjects and demonstrate a relationship between values held and coping behavior. Finally, similarities and differences in value orientations between our subjects and an acculturating group of similar ethnic background are discussed.

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*Department of Social Relations
Harvard University
1520 William James Hall
Cambridge, Massachusetts 02138*

PERSONALITY AND ESTHETIC SENSITIVITY IN AN ISLAMIC CULTURE*

University of the Punjab, Lahore, Pakistan; and Yale University

MAH PERVIN ANWAR AND IRVIN L. CHILD

A. INTRODUCTION

Esthetic sensitivity to visual art has often been measured by assessing how much a person's art preferences agree with expert judgments of esthetic quality. Child (1) has developed for this purpose materials consisting of pairs of slides; each pair contains two rather similar works of art, one much better than the other in the opinion of U. S. experts (advanced students of art). Such judgments by experts in one culture might be expected to differ somewhat from judgments that would be made by experts in another culture. Factual test, while confirming this, also shows that esthetic judgments show some constancy across cultural boundaries (2, 4, 5, 6). It is reasonable to hope, therefore, that materials for testing esthetic sensitivity, developed in one culture through judgments by experts there, may still be useful when applied in another cultural setting.

Such an application has already been made in testing whether esthetic sensitivity has similar personality correlates in U. S. and Japanese college students. Child (1) had found that the degree to which American college students' within-pair preferences corresponded to expert judgment of quality was correlated with a number of personality variables; among these were questionnaire measures of tolerance for complexity, independence of judgment, and regression in the service of the ego. Questionnaire items of these three kinds, translated into Japanese, and art pairs prepared in the U. S. were used with Japanese college students by Child and Iwao (3), who found the same relations previously found with U. S. college students.

The present study tests whether this finding on personality and esthetic sensitivity can be extended to another cultural setting, that of students attending a university in a large city in an Islamic country. Students were obtained in several different parts of the university; we are therefore able to compare groups likely to differ markedly in artistic background, as was not possible in either the Japanese or the American studies.

* Received in the Editorial Office, Provincetown, Massachusetts, on January 10, 1972, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1972, by The Journal Press.

B. METHOD

1. SUBJECTS

The subjects were all students in the University of the Panjab, Lahore, Pakistan, or in a college affiliated with it. They consisted of all students present in various classes on the one or two days when class time was devoted to participation in the research. The subjects formed four groups, defined by the courses in which the research was done.

1. Fine Arts students (B.A. or M.A. candidates), three men and 29 women, majoring in graphic arts with the intention of becoming professional designers.

2. Psychology students (B.A. candidates), 25 men and 33 women, obtained through a psychology course but only some of them majoring in psychology; these students were registered in Government College, Lahore, a college requiring especially high academic qualifications for admission.

3. Administrative Science students (M.A. candidates), 32 men and 10 women, mostly preparing for a business career.

4. Education students (M.A. candidates), 75 men and 24 women, including a much larger proportion of students from conservative rural background than the other groups, and a larger proportion of students having less experience with English as the general language of instruction.

2. Materials

To measure esthetic sensitivity, 100 pairs of slides were used; they had been selected for transcultural use, by the criterion of requiring little knowledge of any specific tradition for understanding the work or subject matter. They included the 80 pairs used in the Japanese study and in the replication part of the U. S. college study.

Personality characteristics were measured by the 49-item questionnaire (3) used by Child and Iwao with secondary-school students in the U. S. It was based on the questionnaire used in the American college study, but many items had been modified to make them significant to a wider population and easier to understand.

3. Procedure

The data were collected in one long or two ordinary class sessions. Sessions were in charge of the author who is a faculty member in art education at the Institute of Education and Research, University of the Panjab. She was

introduced by the regular class instructor (except in groups where she was already known). She began by describing the research without mentioning the specific purposes, indicating its complete independence from the course work, and asking for the students' cooperation, which in general seemed to be given very willingly. She first asked them to fill out the questionnaire; it contained its own instructions, and the experimenter read these aloud. Indicating that the questionnaire was in American-style English, she encouraged questions about obscurities which she would then clarify. This step was necessary because, though English is the language of instruction, students vary widely in the variety and breadth of their acquaintance with it. No time limit was set, and an effort was made to ensure everyone's having time to understand and respond adequately to each item. In general, the questionnaire appeared to interest the students, and it was a novel kind of experience for them. Some students who had missed the first session spontaneously sought opportunity to fill out the questionnaire.

For the second procedure, the experimenter began by explaining that in each pair of slides one work was generally considered by people interested in art to be better than the other, and that each person should try to judge or guess which work that was. Choices were to be indicated on a mimeographed answer form. Each pair of slides was projected side by side for about half a minute. This task too appeared to be generally interesting.

C. RESULTS

Within each category of students, the two sexes do not differ consistently in mean esthetic sensitivity score. The group differences cannot, therefore, be due to the widely varying sex ratio, and we are presenting the main results without regard to sex. They are presented quantitatively in Table 1.

1. *Internal Consistency of Variables*

The alpha coefficient of internal consistency indicates that each of the variables has some reasonable degree of internal consistency (though not enough for reliable assessment of individuals), except for tolerance of complexity. The three personality measures show consistent positive correlations one with the other, as indicated on Table 2, of a magnitude comparable with the coefficients of internal consistency. There is thus no satisfactory evidence that the three measure separate variables, so we have also included results obtained by pooling all 49 questionnaire items as a single measure of cognitive style of openness and complexity.

TABLE 1
ESTHETIC SENSITIVITY AND QUESTIONNAIRE SCORES^a OF FOUR GROUPS OF PAKISTANI
UNIVERSITY STUDENTS

Personality variable	Category of student ^b				
	Fine arts (32)	Psych. & gen. B.A. (58)	Admin. sci. (42)	Educ. (99)	Total (231)
Esthetic preference					
Mean	55.78	46.55	46.52	47.02	48.03
SD	6.77	7.01	5.09	5.51	6.79
Alpha	.61	.57	.26	.30	.53
Tolerance of complexity					
Mean	56.92	54.43	56.97	49.86	53.28
SD	10.79	15.05	11.82	11.80	12.95
Alpha	.00	.37	.00	.01	.15
Independence of judgment					
Mean	44.24	40.74	41.73	36.15	39.44
SD	11.23	12.07	11.45	11.14	11.84
Alpha	.35	.40	.24	.31	.35
Regression in the service of the ego					
Mean	60.35	53.13	56.10	48.99	52.90
SD	16.06	14.65	16.17	12.96	15.00
Alpha	.61	.36	.51	.18	.40
Openness and complexity (sum of the above three)					
Mean	53.13	48.70	50.78	44.26	47.79
SD	8.19	10.68	9.02	7.74	9.46
Alpha	.48	.66	.50	.35	.55

^a All scores are expressed as percentages (i.e., out of the total number of items for the variable, the percent answered in the indicative direction).

^b Numbers within parentheses indicate *N* for each category.

2. Group Differences in Esthetic Sensitivity

The fine arts students have a much higher average score than the other three groups, and these do not differ appreciably one from another. The greater tendency of the art students to agree with the U. S. experts shows considerable consistency from item to item. For 55 out of 100 items, the percentage of agreement is higher in the arts group than in any of the other three groups. (We tried out a measure of esthetic sensitivity based on only these 55 items, rooted thus in group differences within Pakistan, as well as within the U. S. Since the correlational results to be summarized below did not differ substantially according to whether the 55 or all 100 items were used, we have used only the 100-item measure.)

TABLE 2
CORRELATIONS BETWEEN PERSONALITY VARIABLES FOR FOUR GROUPS
OF PAKISTANI UNIVERSITY STUDENTS

Personality variables	Category of student ^a				
	Fine arts (32)	Psych. & gen. B.A. (58)	Admin. sci. (42)	Educ. (99)	Total (231)
Esthetic sensitivity <i>vs.</i> Tol- erance of complexity	.31*	.36**	.18	.13	.25**
Independence of judg- ment	.60**	.52**	.16	.00	.30**
Regression in the service of the ego	-.10	.44**	.32*	-.05	.22**
Openness and complexity	.37*	.57**	.33*	.03	.36**
Tolerance of complexity <i>vs.</i> Independence of judg- ment	.35*	.40**	.32*	.12	.32**
Regression in the service of the ego	.17	.44**	.23	.03	.22**
Independence of judgment <i>vs.</i> Regression in the ser- vice of the ego	.16	.37**	.09	.21*	.27**

^a Numbers within parentheses indicate *N* for each category.

* Correlation significant at .05 level, one-tailed test.

** Correlation significant at .01 level, one-tailed test.

3. Group Differences in Personality Questionnaire

The most consistent group difference here is the markedly lower average of the education students on all three personality variables and their sum. This finding is consistent with the higher proportion, in this group, of students of rural origin, for all three variables seem likely to be positively correlated with urbanization and accompanying intellectual sophistication. At the other end of the scale, the fine arts students have the highest mean on two of the variables, but on tolerance of complexity their mean is matched by that of the administrative science group, which is second to them on the other two variables.

4. Correlation Between Esthetic Sensitivity and Personality Variables

For all 231 subjects considered together, esthetic sensitivity has a highly significant positive relation to each of the three original personality measures and to their total, as shown in Table 2. The relationship is in the same range of magnitude as has been found in earlier studies of college students in the U. S.

and Japan. One personality variable, Regression in the Service of the Ego, shows no relation to esthetic sensitivity in the Fine Arts group; the magnitude of the other correlations for this group, and the small size of the group suggest that this negative finding is a sampling error. Among the education students, on the other hand, the relation between esthetic sensitivity and personality disappears, and the large size of the sample warrants the inference that the relation here is genuinely absent or very small.

D. DISCUSSION

Among the various student groups participating in this study, only those in fine arts are likely to have very extensive acquaintance with Western art. The fine art and craft objects commonly seen by most children and adults in the local population are almost entirely products of the general Islamic tradition and its local version in interaction with Indian traditions during and since the Moghul empire. Apart from distinctions of style, the Islamic tradition is characterized by complete absence of representational religious art, by lesser elaboration of representational art generally (though this region of Pakistan has a history of outstanding miniature paintings of landscapes, portraits, and historical scenes), and by great elaboration of decorative art in architecture and personal adornment. While Western design is seen in imported factory products, and influences design of buildings and furniture, Western painting and sculpture are almost unknown except to students of art and others who may seek out examples. There are, for instance, some paintings of European style in the Lahore museum and in temporary exhibits there, and American magazines depicting U. S. art may be consulted in the library operated by the U. S. government. The total impact of these Western influences in the formation of taste seems likely to be rather limited; only art students have easy access to good reproductions of Western art in large number, through slides and books.

We are inclined to view the higher score of art students on the esthetic sensitivity measure as resulting, in part, from some universalities of esthetic judgment combined with the greater interest in esthetic values which (with other motives) leads these students to their interest in art. Since the art students also know about Western art and the values associated with it, we assume that this knowledge contributes to their advantage over other groups on the esthetic sensitivity measure, and we cannot exclude the possibility that it might be the sole source of that advantage.

More persuasive evidence of some universalities underlying esthetic interest is provided by results obtained with the personality questionnaire. In the U. S. and Japan, esthetic sensitivity had been found to be positively correlated,

among college students, with three personality variables indicative of openness and complexity. In the Pakistani study these variables have for the first time been assessed in student groups differing in amount of interest in art. The high scores obtained by the students of fine art suggest that the personal tendencies leading to their interest in art resemble those associated with esthetic sensitivity in two other cultures. This interpretation is supported by the correlations obtained, within three of the four groups, between esthetic sensitivity and the personality variables; this finding directly confirms, for individual differences in this Islamic cultural setting, the pattern of relationship between personality and esthetic sensitivity previously established for college students in the United States and Japan. The absence of this relationship in one of the four student groups stands as an exception not yet interpretable with any confidence. It may be a product of sampling error, favored (despite the large size of this group) by the especially low internal consistency in this group of most of our measures. Or it may be some more basic consequence of the relatively low urbanization and intellectual sophistication of this group. Perhaps in a rural setting with a more conservative tradition, openness and complexity are somewhat discouraged or are likely to be expressed in interests other than esthetic. This reasoning, however, would lead us to expect esthetic sensitivity to show a decidedly lower average among the education students than in the other nonart groups, and no such difference appears. Only through further study of the relation between personality and esthetic sensitivity in various groups will we learn whether the relation is genuinely absent in some groups and present in others.

E. SUMMARY

In several groups of Pakistani university students, esthetic sensitivity was measured by ability to identify which, of paired art objects, was considered by experts to be esthetically superior. Three aspects of cognitive style—tolerance of complexity, independence of judgment, and regression in the service of the ego—were measured by questionnaire. Students of fine art scored higher than other groups in esthetic sensitivity. The measures of cognitive style were positively correlated with esthetic sensitivity overall, and separately within three of the four groups. These findings add to previous evidence for some degree of transcultural validity of esthetic judgments, and for some constancy across cultures in the personal significance of esthetic interests.

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Department of Psychology

Yale University

333 Cedar Street

New Haven, Connecticut 06510

LIKELIHOOD OF ESCAPE, LIKELIHOOD OF DANGER, AND PANIC BEHAVIOR*¹

Case Western Reserve University and University of Wisconsin

SHARON GUTEN AND VERNON L. ALLEN

A. INTRODUCTION

Group panic is a dramatic phenomenon that has stimulated the imagination of social philosophers and social scientists for at least half a century. More recently attempts have been made to delineate the individual and situational variables affecting panic. For example, experimental analogues and *post hoc* analyses of panics and disasters have specified such variables as individual differences in response to threat (3, 8, 10, 14); degree of organization within the group (6); presence or absence of a leader (6); group size (2); social influence within the group (6, 9, 12); magnitude of threat (9); cues concerning time allotment (9); forewarnings (10); and rumors (5, 7).

These variables have been assumed to influence the degree of perceived danger in a potential panic situation. The notion of perceived danger has, however, been imprecisely conceptualized. Variables affecting degree of perceived danger can be more satisfactorily conceptualized by drawing distinctions among (a) amount of physical danger, (b) perceived likelihood of escape, and (c) perceived likelihood of danger if escape attempts fail.

Kelley *et al.* (9) have suggested that the distinction between amount of physical danger and perceived likelihood of escape is an important one. In previous experiments manipulating amount of physical danger (6, 9, 12), perceived likelihood of escape, and perceived likelihood of danger were either ignored or assumed to be high. Nature of the interaction among these three variables cannot be determined from previous studies.

Anecdotal evidence suggests that amount of physical danger is insufficient to account for behavior in potential panic situations. When people feel definitely entrapped, uncoordinated group behavior characteristic of panic does not occur, in spite of high physical danger. Miners who perceive themselves to be definitely entrapped in mines do not attempt to escape, according to cases cited by Quarantelli (14). In short, the individual's own definition of the situation,

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¹ This study was conducted while the first author was a recipient of an NSF undergraduate research fellowship in psychology.

in terms of expectation about likelihood of escape and evaluation of likelihood of danger, is a crucial element in situations of potential panic.

Moreover, evidence from the stress literature suggests a curvilinear relation between degree of ambiguity of the stressor and degree of anxiety experienced (1, 13). It is likely, then, that a greater degree of psychological stress will be experienced—and hence strongest escape attempts will be made—in conditions where perceived likelihood of escape and perceived likelihood of danger (if escape attempts fail) are ambiguous.

The present experiment investigates intensity of escape attempts from a simulated panic situation as a function of perceived likelihood of escape from a potentially stressful situation and perceived likelihood of danger if escape attempts fail. Magnitude of physical danger was not manipulated since previous work (9) has demonstrated a relationship between magnitude of physical danger and uncoordinated behavior. In this study physical danger was held constant across all conditions by telling Ss that they would receive a series of electric shocks just below their shock thresholds if they did not escape. It is hypothesized that an individual's escape attempts will be more intense when likelihood of escape and likelihood of danger are perceived as highly ambiguous.

The present study differs procedurally in certain respects from previous ones. Unlike the Kelley *et al.* (9) and Mintz (12) studies, no cues are available in this experiment about the behavior of other group members. Also different from other studies is our dependent variable—intensity of the S's escape attempts. Previous studies have operationalized panic in terms of average time of group escape (12) or percentage of group members escaping within a specified time (9). The dependent measure used in the present study operationalizes what Kelley *et al.* (9) refer to as an "attitude toward the urgency of escape," rather than the obvious consequences of group members' panic responses (i.e., jamming or stampeding).

B. METHOD

1. Subjects

Subjects were 105 female college students who volunteered from introductory psychology courses. No indication of the nature of the study was given at the time of volunteering. Nineteen Ss were disqualified for the following reasons: two reported heart murmurs, nine refused to sign the release form indicating consent to participate in research involving electric shock, and eight misunderstood instructions. Subjects were assigned randomly to one of the nine experimental conditions.

2. Design

A 3×3 factorial design was used. High, medium, or low likelihood of escape was manipulated by the number of opportunities given for escape from the stressful situation. The second variable, likelihood of danger, consisted of high, medium, or low probability of receiving painful electric shock if the *S* failed to escape within the allotted intervals.

3. Procedure

Each *S* was led to believe that she was one of five *S*s participating in the study. In reality, only one *S* participated; the presence of the other four group members was simulated. The *S* was told that the study required group members not to have visual contact with each other and that their arrival times had been varied to avoid prior interaction. The *S* was allegedly the fifth and final group member to arrive. To ensure credibility of the deception a number of precautions were taken. First, since *S*s volunteered by signing in a booklet, four false names were entered in the booklet for each *S* needed. Thus, if the *S* should look through the booklet (as many did), she would see that four other persons had volunteered to participate at the same time. Second, coats and books were placed on a chair in the experimental room so the *S* would assume that other group members had already arrived and were seated in the other four cubicles. Third, when the *E* collected questionnaires, the doors of the four (vacant) cubicles were opened and closed so that the real *S* would hear the sounds and assume the presence of other persons. Finally, when *S*s were requested to communicate with the *E*, taped responses of the other four simulated group members were heard by the real *S*.

Inside the *S*'s soundproof booth were a bar-press lever, a shock apparatus, and a communication system between the *E* and the *S*s. After being seated in the booth, the *S* was introduced to the "other four group members" via tape-recorded instructions, and heard each group member state her number and name. The *S* was instructed to press the lever of the bar press apparatus as fast as possible for an unstated time duration (four minutes) to obtain a measure of "psychomotor ability." This speed score was used as a baseline for the dependent measure, intensity of escape attempt.

Subjects were told they were participating in a study of panic behavior and were asked to complete a questionnaire assessing their physical health. They were also informed that the experiment involved electric shock, and were asked to sign a "release form," indicating willingness to participate. The real *S* heard the four simulated group members reply affirmatively before giving her response.

Individual pain thresholds for electric shock were then determined in order to demonstrate to the *S* that electric shocks actually were being used in the experiment. Electrodes were attached to the *S*'s nonpreferred hand and shock intensity increased until she reported discomfort.

4. *Experimental Manipulations*

The *S* was told that the entire group was in a dangerous situation from which members could escape within a prescribed number of time intervals. Only one *S* could escape within a single time interval—the person who exerted the greatest effort by hitting the bar-press apparatus fastest during that interval. (A jam would allegedly occur, and no one would escape, if two or more persons hit the lever at approximately the same rate during an interval.)

Likelihood of escape was manipulated by varying the number of four-minute intervals comprising the opportunity for escape: high (10 intervals), medium (six intervals), or low (two intervals). For example, in the six-interval condition, it was pointed out that the six opportunities provided sufficient opportunity for each of the five group members to escape even if one jam occurred. Three conditions of likelihood of danger (if the *S* did not escape) were created by appropriate instructions. The *S* was told that for group members who did not escape during the number of time intervals available there would be 100 percent (or 50 percent or 10 percent) probability of receiving painful electric shocks. Prior to the escape phase the *S* rated on a seven-point scale her uneasiness about getting shocked.

5. *Dependent Measure*

Data were obtained only from the first escape interval, after which the experiment was terminated. Therefore, no *S* actually received a series of shocks near her shock threshold. Intensity of the *S*'s escape attempt was measured by the algebraic difference between frequency of lever-pressing on the first escape interval and her base-rate: i.e., the score obtained under nonstressful conditions at the beginning of the experiment.

C. RESULTS

1. *Success of Manipulations*

Comments made during the postexperimental interview and responses on the open-ended questionnaire attested to the success of the procedural deception: *S*s clearly believed that four other persons had participated in the experiment with them. Questionnaire responses, as well as fear ratings, showed that

Ss also accepted the reality of their receiving electric shock during the course of the experiment. On the rating scale, a score of seven indicated maximum uneasiness about receiving shock. For the nine experimental conditions, mean fear ratings fell between six and seven. Moreover, there was no significant difference among experimental conditions in fear ratings.

2. *Escape Attempts*

A significant main effect was found for the likelihood of escape variable ($F = 4.45, p < .025$). The main effect was not significant for the likelihood of danger variable, nor was the interaction term significant. The analysis of variance also indicated that escape attempts were related in a curvilinear fashion to perceived likelihood of escape. The statistical test for the quadratic component in the trend analysis for the likelihood of escape variable was significant at the .025 level ($F = 6.36$).

Means for the escape data are presented in Table 1. Although there was not a significant interaction term in the analysis of variance, these data are presented to show that the overall curvilinearity of the relation between escape attempts and likelihood of escape is clearly accounted for by the medium and high levels of likelihood of danger.

The percentage of Ss in each condition who did not try to escape on the first escape interval constitutes an additional measure of intensity of escape. (Subjects did not know, of course, that the experiment would be terminated after the first escape interval.) Results showed that only 13 percent of the Ss (11 of 86) failed to attempt to escape on the first escape interval; these Ss were evenly distributed across the experimental conditions.

3. *Correlation of Fear and Escape*

Although there was no difference among conditions in fear ratings, escape attempts might be differentially related to fear within the nine experimental conditions. Therefore, Pearson product-moment correlations were calculated between fear ratings and intensity of escape attempts, collapsing across the likelihood of danger conditions. The correlations were positive and significantly

TABLE 1
MEAN INCREASE IN LEVER-PRESSING RELATIVE TO BASE RATE

Likelihood of danger	Likelihood of escape		
	High	Medium	Low
High	29.97	58.03	38.56
Medium	22.96	47.63	30.06
Low	23.19	42.21	45.93

greater than zero under conditions of high and low likelihood of escape ($r = .45$ and $.42$, respectively; $p < .05$). When likelihood of escape was medium, the correlation was not significantly greater than zero ($r = -.13$).

D. DISCUSSION

1. *Perceived Likelihood of Escape and Perceived Likelihood of Danger*

Our prediction that escape attempts would be greater when both likelihood of escape and likelihood of danger were perceived as highly ambiguous was partially supported by data from the present study. Results disclosed that intensity of escape attempts was related curvilinearly to likelihood of escape, with Ss trying harder to escape when they were unsure that they would be able to do so. Likelihood of danger (if escape failed) apparently had little salience as a stressor for the Ss. The problem of the moment—the necessity of escaping to avoid imminent shock—seems to have completely occupied Ss' focus of attention.

The curvilinear relation between escape attempts and likelihood of escape may explain some puzzling cases of panic behavior. For example, panic sometimes occurs when perceived danger and perceived likelihood of escape is only moderate. Yet, when danger is very high and likelihood of escape is very low, panic sometimes does not occur. Thus, panic may not occur in a situation where common sense would most expect it: in a highly dangerous situation in which there is little chance of escape, as in the example of men trapped in a mine.

It should be remembered that this experiment was characterized by considerable ambiguity. Subjects had no visual cues about other group members, no indication whether others would attempt to escape, no information about the duration of each escape interval, and low certainty about the magnitude of shocks to be received. Actual panic situations likewise seem to be extremely ambiguous. Panics have sometimes been prevented in real life situations by the emergence of a leader or by such incidents as playing music in a burning orchestra hall (11). Effectiveness of these sorts of measures is unlikely to result from any unique characteristics of such actions. Instead, any cue that reduces ambiguity in the situation will probably lessen intensity of individual escape attempts, and thus reduce uncoordinated behavior in the group.

2. *Fear and Escape*

It has been generally assumed that level of fear is related positively to response in a potential panic situation (9). Interestingly, in the present study correlational data within conditions showed that level of fear and escape

intensity were not related in the most stressful condition, medium likelihood of escape. Inspection of the data revealed that Ss with high fear of shock in this stressful condition performed poorly, thereby accounting for the observed nonsignificant correlation. Many other studies have also reported that extremely high levels of anxiety impair performance (4).

E. CONCLUSION

In conclusion, one variable—likelihood of escape—influenced intensity of escape responses. A second variable—likelihood of danger if escape attempts fail—did not systematically affect intensity of escape attempts. It should be remembered that across all conditions of likelihood of escape, intensity of objective danger was held constant and, according to Ss' self-ratings, the threat of shock provoked considerable uneasiness. As Kelley *et al.* (9) have stated, it is unwarranted to assume that Ss' perception of likelihood of escape is high and constant across all conditions of a panic experiment in which other variables are manipulated. Lack of experimental control for likelihood of escape in other studies may help explain inconsistencies among previous research findings in this area.

F. SUMMARY

This experiment investigated the effect of two variables on intensity of escape attempts from a simulated panic situation. The factorial design utilized three levels of likelihood of escape (high, medium, low) and three levels of likelihood of danger if escape attempts failed (high, medium, low). Subjects, 86 female undergraduates, believed they would receive a series of painful electric shocks unless they successfully escaped from the situation by pressing a lever faster than other members of the group. Results showed a curvilinear relation between likelihood of escape and intensity of escape attempts. Likelihood of danger if escape failed did not significantly affect intensity of Ss' escape attempts.

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Department of Sociology
Case Western Reserve University
Cleveland, Ohio 44106

BALANCE EFFECTS IN IMAGE FORMATION*

University of Georgia

EDWARD B. BLANCHARD, MARILYN VICKERS, AND KATINA C. PRICE

A. INTRODUCTION

One of the most influential and pervasive ideas in social psychology has been Heider's (5) principle of cognitive balance. Heider postulated that since an unbalanced set of relationships is unpleasant, people will strive to obtain balance and will prefer balanced situations over unbalanced ones. This principle encompassing Heider's ideas on the sentiment, either positive or negative, between persons or objects has served as the basis for many theories of cognitive organization and functioning. All of the cognitive consistency theories, such as Festinger's (4) theory of cognitive dissonance, Newcomb's (9) balance theory, and Osgood and Tannenbaum's (10) congruity theory, are based on Heider's balance principle.

Heider's theoretical ideas about preference for balanced situations have been empirically confirmed with the use of several different dependent variables. Ratings of the relative pleasantness or unpleasantness of imagined triadic situations were used by Jordan (6) and Price, Harburg, and McLeod (11). DeSoto and Kuethe (3) asked subjects to predict the missing relationship in ambiguously described triadic situations. The learning of material from triadic situations in a paired-associate paradigm was used by DeSoto (2).

Mental imagery and image formation have recently become a topic of concern again (12), after avoidance of such structuralistic phenomena for 50 years or more. In behavior modification techniques, such as Wolpe's (15) systematic desensitization and Cautela's (1) convert sensitization, which use mental images, vividness of imagery, and time parameters, are thought to be important.

In the present study subjects were asked to form images of balanced, unbalanced, and neutral situations. The length of time required to form the image, the vividness of the image, and the S's affective reactions to it were measured. Reasoning from balance theory, the following hypotheses were tested: (a) Balanced scenes will be imagined in a shorter time than unbalanced scenes; (b) images of balanced scenes will be more vivid than images of un-

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balanced scenes; (c) Images of balanced scenes will produce more positive affective ratings than images of unbalanced scenes; (d) Those subjects for whom the scenes are made personally meaningful will show larger effects for Hypotheses 1-3 than those subjects for whom the scenes are hypothetical.

B. METHOD

1. Subjects

Ninety-six subjects, half of each sex, randomly selected from an introductory psychology course subject pool, were used in the study.

2. Instructions

Subjects were run individually by one of two female *Es*. They were told that the experiment was about image formation and that they would be asked to imagine or form mental pictures of certain scenes and situations. Half of the *Ss* were run in a personally meaningful condition in which the names of close friends and disliked acquaintances, which *S* listed for *E* upon request, were used in the experimental scenes. The other half were run in a hypothetical condition in which they were told not to associate the common names used in the scene descriptions with anyone they knew.

After the timing device and scene rating scales were explained to *S*, he was asked to make himself comfortable on a couch. *E*, from a position behind the couch, presented two practice scenes to *S* to determine whether he was able to form vivid images. It had been previously decided that an average vividness score of 4 (see below) would be required to retain the subject in the sample. Only one *S* was eliminated by this criterion.

In the actual experiment 12 scenes were given. Six neutral filler scenes were interspersed with the six experimental Heiderian balance scenes. There were three balanced and three unbalanced scenes patterned after Heider's triadic interpersonal situations. They were written in the following form:

"You (like [+], dislike [-]) _____; you (like [+], dislike [-]) _____; you see that _____ and _____ (like [+], dislike [-]) each other."

An example of a balanced situation was as follows:

"You like Jim; you like Tom; you see that Jim and Tom like each other."

An example of an unbalanced situation was as follows:

"You like Jim; you like Tom; you see that Jim and Tom dislike each other."

Ss were told to begin imagining the scene after it was described. Timing was

begun by *E* at that point and was terminated by *S* when he had formed the image. *S* then rated the scene on the three scales.

To control for order effects the 12 scenes were presented in two different orders. The design of the study thus yielded a 2 (experimenter) \times 2 (sex of subject) \times 2 (condition) \times 2 (order) \times 6 (experimental scenes) factorial with six subjects in each cell and repeated measures on the last factor.

3. Scene Rating Scales

The first scale was one of scene vividness, developed by Schubot (13). It consisted of an 11-point scale for which six points were anchored by descriptive phrases:

- 10—The scene was as vivid as an actual experience.
- 8—The scene was as vivid as a movie.
- 6—The scene was clear, but not as vivid as a movie.
- 4—The scene was sometimes clear, sometimes vague.
- 2—The scene was vague.
- 0—The scene was thought about, but not visualized.

The Good-Bad and Happy-Sad scales consisted of seven-point scales on which *S* was to rate how the scene made him feel. These two scales served as a manipulation check, since other investigators, such as Jordan (6), have found that *Ss* tend to rate balanced situations more positively than unbalanced ones on similar scales.

C. RESULTS

1. Preliminary Analyses

Preliminary analyses revealed no significant main effect of Experimenter or Order of situation presentation, nor any interactions of these variables with the remaining ones. Therefore the results were pooled across these two variables. Separate analyses of variance were performed on each of the four dependent variables; the results of these analyses are summarized in Table 1.

One can see from Table 1 that Sex of *S* was not a significant source of variance on any of the dependent variables, but that it did interact significantly with Condition ($F = 6.04$, $p < .05$) on the vividness ratings and with the Situations variable for the two affect rating scales. Moreover, the Situations variable was significant at the .01 level for all four dependent variables, indicating differences between balanced and unbalanced triadic situations. These differences, which are the major concern of this study, are discussed in more detail below for each dependent variable.

TABLE 1
SUMMARY OF *F* VALUES FOR ANALYSES OF VARIANCE OF DEPENDENT VARIABLES

Source	Dependent variable			
	Vividness	Time	Good-Bad	Happy-Sad
Between				
<i>S</i> Sex (A)	< 1.0	< 1.0	< 1.0	< 1.0
Condition (B)	3.10	< 1.0	6.02*	10.27**
A × B	6.04*	< 1.0	3.42	2.75
Within				
Situations (C)	20.2**	6.17**	97.0**	114.7**
A × C	1.18	1.09	3.04*	3.19**
B × C	5.81**	1.03	3.99**	2.55*
A × B × C	1.01	< 1.0	< 1.0	< 1.0

Note: Degrees of freedom for Between: 1, 92; for Within: 5, 460.

* $p < .05$.

** $p < .01$.

2. Vividness

In Table 2 are presented the mean vividness ratings for each triadic situation for both the personally meaningful and hypothetical conditions. Although it only approached an acceptable level of significance ($p < .09$), that *Ss* in the personally meaningful condition reported consistently more vivid image formation than those in the hypothetical condition does serve somewhat as a manipulation validation, since one would expect images of close acquaintances to be more vivid than those of hypothetical strangers. For three situations the personally meaningful condition elicits significantly more vivid scenes than the hypothetical condition.

The means in each condition were compared with the use of the Newman-Keuls (14) procedure. For the personally meaningful condition, the balanced situation (+ + +) was imagined significantly more vividly ($p < .01$) than all others which did not themselves differ. In the hypothetical condition the balanced situation (+ + +) was again visualized significantly ($p < .01$) more vividly than all others; moreover, the balanced situation (+ - -) was imagined more vividly ($p < .05$) than the unbalanced situation (- - -).

3. Time

Despite the well-known variability in individual reaction times, *Ss* did differ significantly ($F = 6.17$, $p < .01$) in the length of time it took them to form images of situations varying in balance. None of the other variables had a significant effect on this variable. In Table 2 the mean times to form images of triadic situations are presented. These means were compared by the New-

TABLE 2
MEAN DEPENDENT VARIABLE VALUES FOR TRIADIC SITUATIONS

Condition	Situations					
	Balanced			Unbalanced		
	+++	+--	--+	++-	+-+	---
<i>Vividness</i>						
Personally meaningful	8.3 _a	6.8 _b	6.4 _a _b	6.2 _b	6.3 _a _b	6.4 _a _b
Hypothetical	7.9 _a	6.4 _b	5.9 _{bc}	5.9 _{bc}	5.8 _{bc}	5.3 _c
<i>Time^b</i>						
	2.04 _a	2.85 _b	3.02 _b	3.01 _b	3.18 _b	3.32 _b
<i>Good-Bad^c</i>						
Personally meaningful	6.4 _a	4.4 _b	3.7 _b	2.7 _c	3.4 _{bc}	3.9 _{bc}
Hypothetical	6.0 _a	4.1 _b	3.5 _{bc}	2.9 _c	3.5 _{bc}	3.7 _{bc}

Note: Entries in the same row, which are not different at the .05 level, share the same subscripts.

^a For the vividness ratings, situations on which the *Ss* in the two conditions differ at the .05 level are indicated by the superscript.

^b The times are in seconds.

^c The higher the rating, the more positive (good) the situation was rated.

man-Keuls procedure which revealed that significantly ($p < .05$) less time was required to form an image of the balanced situation (+++) than for all of the other five, which did not themselves differ. The difference amounted to almost one second in most instances.

4. Affective Ratings

Since the Good-Bad and Happy-Sad scales yielded similar patterns of results, and are highly correlated (for six situations the mean $r = .719$, $p < .001$), only the results for the Good-Bad scale are reported.

There was a main effect of Condition ($F = 6.02$, $p < .05$), indicating that situations involving friends were rated higher on the whole than situations involving hypothetical people. The significant interaction of subject Sex with Situations ($F = 3.04$, $p < .05$) was due to a balanced situation (--+) which males rated significantly more positively ($F = 2.08$, $p < .01$) than did females. There were no differences between ratings of males and females on any other item.

In Table 2 are presented the mean Good-Bad scale values for all situations for both conditions, collapsed across sex. These means were compared by means of the Newman-Keuls procedure. For the personally meaningful condition, the

balanced situation (+ + +) was rated significantly more positively ($p < .01$) than all other situations. The balanced situation (+ - -) and the unbalanced situation (- - -) were rated more positively ($p < .05$) than the unbalanced situation (+ + -).

In the hypothetical condition again the balanced situation (+ + +) was rated more positively ($p < .01$) than all the other situations. Also the balanced situation (+ - -) was rated more positively ($p < .05$) than the unbalanced situation (+ + -).

5. *Intercorrelations of Dependent Variables*

Inspection of the results in Table 2 and of the pattern of significant differences discussed above reveals a fair degree of similarity across dependent variables. Therefore the four dependent variables were intercorrelated for each situation and these correlations were averaged with the use of an r to z transformation. As mentioned previously, the Good-Bad and Happy-Sad scales were highly correlated. There was also a significant negative correlation ($r = -.271$, $p < .01$) between time to form the image and its vividness, indicating that vivid images are formed more quickly. None of the other correlations was significant.

D. DISCUSSION

The results of this study confirm the first three hypotheses, that balanced situations will be imagined more vividly, more rapidly, and elicit more positive affective ratings than unbalanced situations. These results were true primarily in the case of the (+ + +) situation. The fourth hypothesis, that situations which were made personally meaningful would elicit stronger effects than hypothetical situations, was confirmed only for vividness ratings.

Although the valence of situations was not experimentally manipulated in the present study, the preference for, and more positive ratings of, the balanced situations is well known (5, 6). Thus an explanation of the results could be that for situations that are more negatively rated, the images are formed less rapidly and are less vivid. This is supported by the significant inverse relationship between vividness and image formation time, or latency. No causal relationship can be adduced, however, since the relationship of affective rating, vividness and image latency is correlational, and significant for only some situations.

Indirect confirmation of this explanation comes from the study of aversive conditioning of sexual revivates. Both McGuire and Vallance (8) and Marks and Gelder (7) utilized procedures in which patients were administered

painful electric shocks while they imagined themselves engaged in sexual activities with their deviant objects. With repeated shocks, the sexual objects were rated less positively on the semantic differential or other attitude scales. Moreover, the images required increasingly longer times to form and were less vivid.

An alternative explanation for findings of this study might be that balanced situations, especially ones of the (+ + +) nature, are more common, thus leading people to have more experience with them. With this hypothesized increased familiarity, images of the situations would be formed more rapidly and more vividly. This is partially supported by the finding that situations in the personally meaningful condition were imagined more vividly than those in the hypothetical condition. By the same reasoning of increased familiarity, balanced situations would be rated more positively.

In any event, regardless of the causal process, this study has demonstrated the efficacy of additional measures of balance effects, vividness and image latency, and has provided additional confirmation of the relationship between affect, vividness, and latency of images found in aversive conditioning studies.

E. Summary

Subjects imagined scenes of triadic situations, varying in degree of balance and as to whether other persons were close acquaintances or hypothetical strangers, and reported the vividness of the scenes as well as their affective reactions to them. Balanced situations were imaged more rapidly, more vividly, and were rated more positively, regardless of subject sex or order of presentation.

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Department of Psychiatry
University of Mississippi Medical Center
Jackson, Mississippi 39216

THE CONSTRUCTION OF AN INSTRUMENT TO MEASURE AMERICAN SOCIOPOLITICAL VALUES*

The Florida State University, Tallahassee

B. J. ALLEN, JR.

A. INTRODUCTION

In an effort to develop a comprehensive instrument that has utility in assessing the extent to which students are committed to American sociopolitical values, the relevant literature was carefully reviewed and a large pool of value statements was compiled and submitted to a group of political and social scientists. They were asked to evaluate the statements in terms of clarity, appropriateness, and accuracy, and to eliminate those that failed to meet the criteria, and to add statements if necessary to insure comprehensiveness. The pool of statements was subjected to a re-examination, and those that were unnecessarily redundant were removed and the remainder were recast in language appropriate for scale items, some of which were stated positively and some negatively. The preliminary form of the instrument, consisting of 61 items, was administered to a sample of 312 high school students in eight Florida schools. A standard item analysis procedure was employed to eliminate items that failed to yield a high level of discriminatory power, resulting in the 46-item Scale of Beliefs.

For each item in the Scale of Beliefs, five Likert-type response alternatives are provided: strongly agree, agree, irresolute, disagree, and strongly disagree. Scoring is accomplished by weighing responses in the direction of the American value position. A statement positively related to an American value is given a score of 5 for the strongly agree response; and a correspondingly decreased numerical value is given for each other response, so that strongly disagree receives a score of 1. Conversely, responses to a negatively related statement are scored in the opposite direction: i.e., 5 is assigned to the strongly disagree response. Following each item in the Scale reproduced below, the agree or disagree direction for obtaining the positive score is indicated in parentheses.

1. Citizens should be allowed to criticize government officials and policies freely, even if it is embarrassing to government. (agree)
2. Profit making is exploitation and should be eliminated. (disagree)

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3. The men who control the industrial and agricultural wealth of a nation should have more influence on government policies than others. (disagree)
4. During peacetime, members of extremist groups should be allowed to speak on radio and television. (agree)
5. We should make it our business to find out with whom the people in our neighborhood associate. (disagree)
6. The administration of justice should be based on whatever is best for the nation. (disagree)
7. In some cases a warrant should not be necessary in order for police to search a person or his home. (disagree)
8. Since we are all Americans, having only one political party in operation would better represent the totality of American interests. (disagree)
9. Private groups, such as civic and veteran's organizations, should not be allowed to participate in political campaigns. (disagree)
10. Citizens should have the same general belief about the role of government in the economy. (disagree)
11. Political parties should carefully screen all persons who want to join the party. (disagree)
12. Teachers should be carefully restricted in what they teach in schools. (disagree)
13. To insure future participation in politics, all young people should be required to join a political youth group. (disagree)
14. Laws should be designed to serve the interests of the state. (disagree)
15. The right to vote should be granted to all qualified persons, even those having radically different ideas. (agree)
16. In some criminal cases a trial by jury should not be allowed. (disagree)
17. Appointed officials, such as police, should be given the authority to censor certain books and movies. (disagree)
18. Any person or group should be allowed to circulate a petition without government approval. (agree)
19. Only persons with high ability should be provided a free education at the high school level. (disagree)
20. Public opinion should not be a major concern of political leaders in writing party platforms, but only what is best for the people. (disagree)
21. National political party platforms should be determined by national leaders rather than state and local leaders. (disagree)

22. A person should not be required to state his church preference when applying for a job. (agree)
23. Religious belief and worship should not be restricted by the government. (agree)
24. There should not be restrictions placed on the printing and selling of extremist literature. (agree)
25. The value of a product on the market should be determined by the cost of labor necessary to produce the product. (disagree)
26. Threat and force should never be used by political leaders in overcoming their political opponents. (agree)
27. Any person should be allowed to make public speeches. (agree)
28. Any political party concerned with improving the American way of life should be allowed to offer candidates for election. (agree)
29. The president should attempt to persuade congressmen to enact his legislative program. (agree)
30. The welfare of working-class people should be of no concern to upper-class groups. (disagree)
31. If the President dies in office, his successor should be named by the cabinet rather than have the Vice-President become President, as now designated by law. (disagree)
32. Members of a political party should be required to support their party's national platform. (disagree)
33. The government should exert some control over creative efforts in the fields of art, literature, and music. (disagree)
34. The existence of social classes is not in the best interests of American society. (disagree)
35. Family life is interesting, but getting ahead in business is more important. (disagree)
36. Too much criticism of government by newspapers weakens our government and should not be allowed. (disagree)
37. The right of a union to go on strike should not be prohibited by government. (agree)
38. During periods of national crisis a person suspected of disloyalty should be placed in custody. (disagree)
39. Since societal changes follow a definite pattern, government should be able to anticipate the needs of the nation well in advance. (disagree)
40. A person accused of a crime should be allowed to confront those giving evidence against him. (agree)

41. In certain cases, the government should be allowed to take a person's property without going to court. (disagree)

42. The government should take more responsibility in seeing to it that television programs conform to good taste. (disagree)

43. The kinds of goods and services produced in our economic system should be determined by what government decides is needed. (disagree)

44. In order to insure more effective law enforcement, a national police force should be established. (disagree)

45. Local authorities should be allowed to prevent certain religious groups from establishing churches. (disagree)

46. If people are not intelligent and educated they should not be allowed to vote. (disagree)

B. ITEM ANALYSIS

Cumulative scores on the 61-item preliminary scale were determined for the 312 students in the sample. Using the 27 percent with the highest scores as the high criterion group and the 27 percent with the lowest scores as the low criterion group, the investigator employed a t test to determine the significance of the difference between item means of the two groups. To insure a high degree of discriminatory power for each item, all items with a t value of less than 2.33 were eliminated (a t value of 2.33 or greater indicates that differences between the high and low criterion group means are significant at the .01 level of confidence). The 46 items in the Scale of Beliefs met this retention standard.

C. RELIABILITY

The split-half method was employed and resulted in a reliability coefficient for the instrument of .83.

D. MEASURES OF VALIDITY

1. *Correlation of the Scale of Beliefs with Other Scales*

Selected items from each of four attitudinal scales were administered to the student sample along with the Scale of Beliefs. Since the four criterion scales have been used successfully in yielding data concerning aspects of behavior closely related to attitudes that the Scale of Beliefs measures, it was hypothesized that correlations between the Scale of Beliefs and each of the criterion scales would yield coefficients large enough to be significant at the .01 level of confidence. A t test was employed to test the hypothesis that $r = 0$ against the alternate hypothesis that $r > 0$. In each instance the obtained correlations

coefficients shown below were significant at the .01 level (correlations are negative due to the scoring procedures for the criterion measures, each of which is inverse to the scoring for the Scale of Beliefs).

Correlations between selected items of the criterion measures and the Scale of Beliefs was $-.479$ with the California F Scale; $-.384$ with the Dogmatism Scale; $-.506$ with Horton's Latent Communism Scale; $-.361$ with Rokeach's Intellectual Conviction Scale.

2. *Opinions of Experts*¹

The Scale of Beliefs was administered to a jury of experts consisting of 66 justices from 32 State Supreme Courts as a means of validating the response direction determined for each item. It was felt, also, that the item means obtained from the sample of experts would provide a frame of reference for making comparative assessments of subsequent student sample scores.

Department of Social Studies Education
302 Education Building
Florida State University
Tallahassee, Florida 32306

¹ Data with respect to item mean scores for the student sample and for the jury of experts may be obtained by writing the author; or order NAPS Document 01707 from CCM Information Corp.—NAPS, 909 Third Avenue, New York, New York 10022, remitting \$2.00 for microfiche or \$5.00 for photocopy.



THE ETIOLOGY OF GENDER IDENTITY AND THE LESBIAN*

Department of Behavior Studies, Santa Monica College

KENNETH POOLE¹

A. INTRODUCTION

Theories of the etiology of adult sexual orientation have focussed largely on male homosexuality and taken two major approaches. The first of these has involved the genetic and physiological explanations. Outstanding in this approach has been Kallman with his genetic theory (7). However, Marmor and Hooker (6, 8) have been specifically critical of such a genetic view; and Allen, as a medical authority, rejects any constitutional or glandular explanation (1). The second opinion has stressed early learning, and subsequent cognitional functioning, as the factors that foster adult gender role performance. In this consideration, Money has stated that homosexuality relates to disorders of cognitional eroticism established in infancy (9). Similarly, the research of the Hampsons' supports the opinion that an individual's psychosexual frame of reference is determined by the sex of assignment and rearing (4). The work of the Harlows has shown that, for monkeys at least, the mother-infant interaction plays a vital part in the development of heterosexual performance (5). Colley has theorized on the importance of interpersonal relationships as they affect the development of the sexual identity component of the "self" (2) and, echoing this, Greenstein has suggested that learning by differential reinforcement could be a critical aspect of acquiring sexual identity (3).

Logically interrelating and extending these notions, on cognitional learning and the development of sexual identity, provides a theoretical assumption as to the etiology of adult gender role performance that may be expressed as follows: In the beginning the human organism has the potential of pansexuality while, at the same time, entering a critical learning phase. The conditioning events taking place during this phase leave an indelible imprint on the

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¹ This paper is based on part of a dissertation submitted to the Graduate School of the University of Southern California, in partial fulfillment of the requirements for the Ph.D. degree. The author wishes to express his appreciation to Professor LaMar T. Empey, Chairman of the Department of Sociology, under whose supervision the research was conducted.

psychological modalities referred to as personality. Physical interpersonal contact behavior and the related cognitional symbols are particularly susceptible to differential reinforcement processes because of the powerful tension reduction factors involved. Thus, the socialization process channels the erotic inclination and establishes the behavioral systems or sentiments that with maturity precipitate the psychosexual orientation. The cardinal actors in the child's development of gender orientation are the significant others who by gestures, overt behavioral manifestations and role model performance shape the adult erotic role behavior. This theorizing yields a major hypothesis: Heterosexual females have socialization backgrounds that channelled their erotic potential toward adult heterosexual role performance, whereas Lesbians experienced a socialization process that alienated them from such psychosexual role behavior. The purpose of this study was to determine if such a hypothesis had a degree of validity.

B. METHOD

1. *The Instrument*

Initially, open-ended questions concerned with early experiences were presented in interviews conducted with pilot groups of six heterosexual and six homosexual females. In the interviews it became apparent that for these individuals, at least, the socialization process, as it related to the salient aspects of gender role learning, varied by adult sexual orientation. The information gathered was synthesized into a set of 32 questions, 28 of which focussed on five areas perceived of as indicating a decided difference in socialization experience. These five areas involved childhood experience with heterosexual role learning games; early attitudes towards physical sex functions; the relationship between mother and daughter; the maternal role performance; and the relationship between father and daughter. In order to facilitate a relatively brief response time in semipublic environments, the questions were made as simple as possible, succinct and answerable in four categories, as, for example, Often, Sometimes, Rarely, Never.²

2. *The Sampling*

In 1968, with the instrument established, the research project moved out into the Greater Los Angeles area in search of 50 adult female respondents who would define themselves, on an anonymous questionnaire, as being Lesbian or homosexual or both and respond to the effect that their sexual preference was for women. Numerous bars and social clubs catering to homosexuals were

² Interested professionals may obtain copies of the questionnaire from the writer.

visited over a period of months and, after much difficulty, rapport was attained sufficient to provide for the completion of 50 questionnaires, but suspicion of the motives of the male researcher was never overcome to the extent that might be expected from a similar heterosexual group. Thus the cooperation achieved can only be described as minimal. The respondents were not informed of the theoretical assumption of the study although they were told of the researcher's sympathetic appreciation of the difficulties they experienced as social deviants.

With the acquisition of the homosexual sample, attention was turned to the heterosexual population. Due to the limitations of the study, matching, other than roughly for age, was not attempted. In the matter of age the homosexual group had a mean age 30 years with a range of from 20 to 44, while the heterosexuals showed a mean of 28 with a range of from 20 to 52 years. Most of the heterosexual 50 were taken from a college campus population of academic and nonacademic females and, therefore, there was a bias toward a higher education level for the heterosexuals. Lesbian women of high education level, often in professional positions, were extremely reluctant to respond to the questionnaire. It is this researcher's subjective observation, however, that their incorporation into the sample would not have changed the general homosexual response pattern.

Similarly, although conversely, the heterosexuals were defined for the purpose of this study as adult females who responded on the questionnaire to the effect that they were not homosexual or Lesbian or both and that their sexual preference was for men. The heterosexuals were not told of the theoretical assumption of the research before the administration of the instrument, although several were so informed at their personal request after the sampling had been completed. At the time of taking the questionnaire the heterosexual respondents were told that it was a research project on socialization experience.

C. RESULTS

The questionnaire response categories were fourfold, but for the purpose of analysis they were categorized as dichotomies. As an example, Often and Sometimes were categorized in opposition to Rarely and Never. The responses relating to the hypothesis of the study were subjected to the techniques of phi coefficient and chi square. The statistical processing involved four-celled tables with one degree of freedom and, as the expected frequency in some cells was less than 10, Yate's correction for continuity was applied. All five areas, in varying degrees, showed differences between the homosexual and heterosexual samples in regards to socialization experience.

The most significant questions of the areas under consideration yielded the following data.

Area One. Experience with heterosexual role learning. The question relating to recollection of playing "grown-up lady" revealed a $p \leq .001$ (ϕ .67). The heterosexual sample showed 92% experienced such a game often or sometimes, as opposed to 76% of the Lesbians who experienced it rarely or not at all. Recalling playing "mother with dolls" exposed a $p \leq .001$ (ϕ .60). The Lesbian sample showed only 22% sometimes or often played this game as contrasted with 84% of the heterosexuals. Playing at "having a baby" provided a $p \leq .001$ (ϕ .58). Only 16% of the Lesbians recalled much experience with this game, whereas 76% of the heterosexuals reported such recollection. Recollection of playing "house with yourself as mother" revealed a $p \leq .001$ (ϕ .48). Of the homosexuals 78% rarely or not at all experienced this game but only 28% of the heterosexuals responded in the same manner.

Area Two. Attitude toward physical sex function. The question of favorable or unfavorable reaction to the onset of menstruation produced a $p \leq .001$ (ϕ .35). Heterosexuals showed 54% being pleased as original reaction to menstruation, while 18% of the homosexuals reported similarly. Early understanding of the sex act as being "dirty-strange," as opposed to "interesting-pleasant," illustrated a $p \leq .05$ (ϕ .22). Of the Lesbians 68% responded "dirty-strange" in contrast to 44% of the heterosexuals. Responses to the question dealing with thoughts of the genital area of the opposite sex showed a $p \leq .01$ (ϕ .28). The heterosexuals revealed 70% as having had interesting or stimulating thoughts on the subject as opposed to 40% of the Lesbians who reported similar such thoughts.

Area Three. The mother-daughter relationship. Questioned as to mother's influence the analysis of the data showed a $p \leq .001$ (ϕ .41). The heterosexuals in the extent of 90% of the sample reported influential mothers in contrast to 50% of the homosexuals so reporting. Recollection of their mother being affectionate and understanding exposed a $p \leq .001$ (ϕ .36). Only 10% of the heterosexuals recalled their mothers lacking in this regard, while 44% of the Lesbians mentioned the lack.

Area Four. The mother's role performance. As regards the mothers being happy in their roles the data revealed a $p \leq .001$ (ϕ .37). Only 4% of the heterosexual group reported relatively unhappy mothers, but 36% of the homosexuals so reported. Responses to the query on the mother's attitude toward the subject of sex revealed a $p \leq .001$ (ϕ .37). Sex disapproving mothers were recalled by 68% of the Lesbians while 28% of the heterosexuals reported similarly.

Area Five. The relationship between father and daughter. As regards the respondent's perception of the father being affectionate and understanding, the data indicated a $p \leq .001$ ($\phi .36$). Homosexuals in the sample to the extent of 62% reported fathers lacking in this regard, while only 24% of the heterosexuals so reported. The question of the father's disapproval of the subject of sex yielded a $p \leq .01$ ($\phi .26$). In the Lesbian sample 60% declared for their father's disapproval of the subject as opposed to 32% of the heterosexuals who so reported.

D. DISCUSSION

Any interpretation of the results of this study must be tempered by the observation that the individuals responding to the questions were by no means random selections from a known universe and generalizations must be modified accordingly. However, despite the limitations, certain tentative opinions appear justifiable. The data analysis did provide support for the hypothesis. Therefore, some measure of merit was also provided for the theoretical assumption of the study, that adult gender role performance has its etiological roots in the socialization process. Adult heterosexuals, of the sample, were observed to have been socialized by significant others, in the form of parents, towards a positive acceptance of the conventional female sex role. In contrast Lesbians reported relatively few childhood experiences that could have channelled their erotic potential towards the heterosexual role, rather their exposure tended to be of a nature that would result in their negatively defining vital aspects of the adult heterosexual female performance.

An appropriate interjection here questions why those females of the sample, who did not experience positive socialization towards heterosexuality, turned specifically towards homosexuality. In response it is to be pointed out that their early need satisfactions took place in social interaction and thus they were motivated to continue this association and derive from it emotional satisfaction. This motivation, coupled with a mature physiological need for erotic tension reduction, moved them to desire intimate association with other human beings, but not men, for their socialization experience alienated them from male sexuality and the requirements of the complementary female role.

If the findings of this study are considered cumulative, a summarization of particular results provides the suggestion that adult Lesbian sexual identity is correlated with a socialization experience in which the parents did not encourage positive participation in the role learning games that have distinct connotations of adult heterosexual performance, the mother was inclined to be unhappy in her role and both parents tended to lack affection and under-

standing while they disapproved of the subject of sex. Conversely, adult heterosexual female identity is correlated with a positive childhood exposure to female heterosexual role learning games, an influential mother happy in her role, and both parents manifesting affectionate understanding while being without disapproval of the subject of sex.³

E. SUMMARY

On the basis of empirical observation and the opinion of various authorities, a theoretical assumption of the etiology of adult gender role was developed which opined that the child's early learning experience channels the erotic inclination and establishes the behavioral and cognitional processes that with maturity precipitate the psychosexual orientation. A hypothesis was derived from this assumption to the effect that heterosexual females would recall socialization experiences that channelled their erotic potential towards heterosexual role performance; whereas, in contrast, the Lesbians would recollect socialization experiences that alienated them from such psychosexual role behavior.

A questionnaire was created and administered to 50 self-admitted Lesbians and 50 self-admitted heterosexuals. While the statistical analysis of the responses has to be tempered with caution, because of the unavoidable nonrandom nature of the sample, the results revealed a decided difference in the socialization experience of the two groups in the direction hypothesized. Thus, the hypothesis and, consequently, the theoretical assumption gained a tentative measure of support.

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Department of Social Studies

Santa Monica College

Santa Monica, California 90406



THE PERSONALITY AND ATTITUDES OF WORKING-CLASS BRITISH COMMUNISTS AND FASCISTS*

Department of Psychology, Institute of Psychiatry, University of London

H. J. EYSENCK AND THELMA T. COULTER¹

A. INTRODUCTION

This study was designed to evaluate certain hypotheses put forward by Eysenck (4, 5, 6, 7) in respect to the structure of attitudes, and the relation of the dimensions posited to the political beliefs and voting patterns of the major (and minor) parties on the British scene. Eysenck suggested that there are two main dimensions around which attitudes are structured; these two orthogonal dimensions he called radical-conservative and tough-minded *vs.* tender-minded, respectively. The letters R and T are sometimes used for convenience to designate these two dimensions. According to the theory, Fascists are tough-minded and conservative, Communists tough-minded and radical; Liberals are tender-minded and neither radical nor conservative. Conservative and Labor supporters are conservative and radical respectively, and intermediate with respect to T. Questionnaires were constructed to measure R and T, and the truth of these propositions as far as the major parties were concerned was supported (7). In addition, class differences were posited and found; working-class people are more tough-minded than middle-class people of the same political persuasion (6). In the present, male working-class members of the Communist and Fascist parties are compared with a sample of working-class males of similar age and social background who are not members of these

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¹ The subject of this study was suggested to Dr. Coulter by the senior author in 1951, and the results furnished the main portion of her Ph.D. thesis in 1953. Joint publication had been planned, but Dr. Coulter's tragic death in an automobile accident made this impossible at the time, and the senior author's growing interest in other matters did not leave him time to write up the research for publication on his own. Short mention was made of the main findings in *The Psychology of Politics*, but with too few details to allow proper appraisal of what is perhaps a unique piece of research. In view of its historical importance, and with the senior author's returning interest in the study of attitudes, it was decided that Journal publication, though long delayed, would still be useful. Only a replication of the research could, of course, decide whether what was true at the end of the war would still be true in 1972, or whether personality patterns of Communists and Fascists had changed in any important respects.

two parties, but whose voting pattern is similar to that of the working class as a whole.

In addition to being interested in the attitudes of members of the two minority parties, we were also concerned with their personality structure. The publication of "The Authoritarian Personality" had aroused interest in this topic, and the theories advanced in this important book, which follow in many details Jaensch's well-known *Der Gegendypus* (11), had produced a crop of studies, none of which, however, had used what one might consider prototypes of authoritarian attitudes: i.e., Communist and Fascist party members. It was hypothesized that such members might in important ways resemble authoritarian personality as depicted by Jaensch and his American followers. To test this hypothesis, a number of tests currently used to measure rigidity and various other personality variables thought relevant were administered to our groups. We also added the T.A.T., in the hope of being able to throw some light on the overt and covert dominance and hostility traits which might be supposed to be characteristic of Communists and Fascists.

B. THE EXPERIMENTAL POPULATION

Three groups of subjects took part in the investigation: Communist Party members, Fascist Party members, and a control group. All the subjects were male, non-Jewish, English-speaking members of the working-class; information was obtained in each case about age, occupation, nationality, and political affiliation. The control group consisted of 86 soldiers who participated in a series of experimental studies at the Maudsley Hospital; their mean age was 23, *SD* 2.7. Their voting intentions were closely similar to those of the British working class, according to current figures released by the British Institute of Public Opinion. It would be unrealistic to regard this as a truly *random* sample of British working-class males, but the short length of their service, coupled with the fact that at the time the great majority of males either were in the armed forces, or had just served in the armed forces, suggests to us that the choice was less arbitrary and unrealistic than it would have been 10 or 15 years later.

The Communist group was made up of 43 male, working-class subjects, all active members of the Communist party. Jewish persons were excluded from the sample because of the antisemitic items in the Ethnocentrism scale which makes it invalid for Jewish subjects. Some of the Communist group were tested at the Communist holiday school during the Summer. Some leads were obtained there which resulted in other members of the party being tested.

Further contacts were made through attending meetings, until eventually the 43 subjects used in the investigation were obtained. In actual fact 61 members of the party were tested, but seven of these had to be discarded because they were Jewish, and 11 because they belonged to the middle class. Communist subjects were not available just for the asking, but with some persistence enough subjects were found who cooperated willingly. Some refusals were encountered because the members did not believe in psychological testing. Subjects were told that the purpose of the investigation was to study social insight. It must be admitted that availability of subjects and anticipated cooperation played some part in their selection. For this reason the sample of Communists may not be entirely representative, but it is not thought that any serious bias was introduced. The age of the subjects ranged from 22 to 39 years, with a mean age of 26 and a standard deviation of 3.5. The mean age of this group is slightly higher than that of the control group. Eysenck (6) found that age was only slightly correlated with either R or T and it is felt that the groups were matched closely enough for age.

The Fascists were the most difficult of all the groups to obtain. There was no question of having to exclude Jewish subjects, but the actual number of Fascists in the London area is not large, probably only numbering about 400 or less. At first Fascists were very resistant to intrusion by someone with whom they were not familiar. Nearly 100 Fascist meetings were attended extending over a period of five months. During this time Thelma T. Coulter steadily gained their confidence until eventually a sample of 46 had been tested. Three of these were female and had to be discarded, but since they offered to be tested it was deemed advisable to do so, since refusal might arouse suspicion. The real purpose of the investigation was disguised by telling the subjects that it was a study of public opinion on questions that are commonly heard discussed over the radio and read about in newspapers. The age range of this group was 22 to 45 with a mean age of 28.6 and a standard deviation of 3.9. Their mean age is slightly above that of the Communist group.

Many hours were spent with various members of the groups in a social situation, almost akin to an interview situation. Here long discussions took place and much valuable information was obtained. Although this information is of a subjective nature, it is rather interesting in itself and suggests further hypotheses which will be discussed later. As with the Communists, subjects were selected partially on the basis of availability and anticipated cooperation. Nevertheless, the same criteria applied: i.e., non-Jewish males,

members of the working class and active members of the party. It is definitely felt that subjects used form a fairly representative sample of the male members of the Fascist party in London.

C. THE ADMINISTRATION OF THE TESTS

The battery of tests was administered individually to each subject in a testing period which lasted approximately two and one half hours. The tests were always administered in the same order and included a smoking break before the administration of the Thematic Apperception Test, which was the final test of the battery. The greatest care was taken to make expression of the subject's attitudes as free and uninhibited as possible. They were assured of complete anonymity and reassured that their names were not needed and not wanted. The subjects were told that even the investigator would not know what scores they made as the results were to be tabulated quite independently. Murphy *et al.* (24) state that if conditions of secrecy and preferably anonymity are observed, there is more reason to expect free and complete expression of verbal attitudes than from actions which are subject to observation and censure. It seems reasonably certain that the subjects responded with a high degree of honesty on the attitude scales.

The battery of tests is described below; copies of all the tests used will be found in Coulter (2).

1. Melvin's (22) amplified form of Eysenck's (5, 6) R and T scale. This has been published in Eysenck (7). A five-point scale was used for answering, ranging from strong agreement through agreement and a "?" response to disagreement and strong disagreement. Corrected split-half reliabilities for the various groups are satisfactory, ranging around .90².

2. The Californian Ethnocentrism Scale (E). This is the 20-item scale constructed by Levinson (19); two questions had to be reworded by changing "America" to "Great Britain." The Likert method of scaling was used, there being six choices of response for each item, ranging from strong agreement (+3) to strong disagreement (-3), with no neutral category. Higher scores show increasing ethnocentrism.

3. The California Fascism Scale (F). This is a 30-item scale constructed by Adorno *et al.* (1) to measure potential for fascism; as in the E scale, slight rewording had to be resorted to in order to make the scale suit English conditions.

² A revised T scale was scored by leaving out two antisemitic items; this was done because of the specifically antisemitic attitudes of Fascists.

4. Dog-Cat Test of Intolerance of Ambiguity. This is a new perceptual test devised for the purpose of this research, with the use of a suggestion by Frenkel-Brunswik which had been made verbally by her to the senior author. The test is reproduced in Eysenck (7, p. 223); it consists of eight pictures of a dog changing into a cat through various transitional stages. Ss intolerant of of ambiguity are supposed to respond more slowly to the changing stimuli and will cling to the percept of the dog even when the picture begins to look like a cat.

5. Luchins water jar test of Einstellung rigidity. The test used was a modification of the technique used by Luchins (21). Precise details are given in Coulter (2).

6. Rokeach social map test. This is a test of rigidity measured by a spatial technique rather than by an arithmetic one; it was designed by Rokeach (29), and the theory underlying it is similar to that underlying the Luchins test.

7. California rigidity test. This is an inventory constructed by Sanford (31) to measure rigidity in personal habits and ways of thinking about people; it contains 22 items and the subject is asked to say whether he thinks each item is true or false.

8. Intolerance of ambiguity questionnaire. This is a 14-item inventory devised by T. T. Coulter; the items were such that by hypothesis and psychological experience they could be regarded as measuring intolerance of ambiguity. The scale is reproduced in Eysenck (7).

9. Thematic Apperception Test. Ten cards from Morgan and Murray's (23) well-known test were used—4, 6BM, 7BM, 10, 11, 12M, 15, 16, 18BM, and 19. Murray's instructions (25) were followed, and the cards were scored according to Sanford's revised Murray need-press system. Murray's (25) correction factor for length of story was used. Only four variables were used for the purpose of this study; need and object need dominance, and need and object need aggression. Dominance was defined as follows: To try to influence the behavior, sentiments, or ideas of others. To work for an executive position. To lead, manage, govern. To coerce, or restrain. Aggression was defined as follows: To hate, fight, or punish an offence. To criticize, blame, accuse, or ridicule maliciously. To injure or kill. Sadism. To fight against legally constituted authorities. To pursue, catch, or imprison a criminal or enemy.

10. Emphasis score. This is a score obtained by totalling for the 60 items of the R/T scale the number of times the subject expresses strong approval or disapproval: i.e., gives extreme scores. The corrected split-half reliability of this score is .85, .93 and .92 for the three groups (C, F, and N).

D. RESULTS

Table 1 shows the *F* ratios and the level of significance of differences between mean scores for the three groups; out of 15 comparisons only one is N.S., one has a level of *p* which is .05, and one has a level of *p* which is .01. Twelve scores discriminate between the groups at better than the $p = .001$ level. As interest center on the comparisons between individual groups, *t* tests are reported between groups in the same table. Let us consider first of all the differences between Communists and Fascists; only significant differences will be discussed. Communists were much more radical than Fascists; Fascists were much more tough-minded. This latter result, however, is an artifact resulting from the presence of many Jews in the Communist group; when the revised *T* scale scoring was used, omitting the antisemitism items, no significant differences were found to exist between Communists and Fascists. Both were more tough-minded than the controls, who were intermediate in *R* between the other two groups; this result supports Eysenck's (6) hypothesis.

On the Ethnocentrism scale the Fascists were more ethnocentric than either of the other two groups; perhaps more surprisingly, the Communists were less so than the normals. On the Fascism scale, too, the Fascists scored higher than the other two groups, but here the Communists also scored much higher than the normals. According to these results, Communists also had a potential for prejudice, but this was not present when racial differences were concerned. Taking all the attitude tests together, we may conclude that the picture presented is a reasonable one, agreeing with hypothesis and showing considerable congruity.

Attitudes were held more emphatically by Fascists and Communists than by controls; the emphasis score showed Fascists more emphatic than Communists, and both more emphatic than controls. These results corroborate Eysenck's (6) findings. They also confirm Eysenck's (5) study in which he used Thoulless's (33) "Index of Tendency Towards Certainty." Here Eysenck noted a tendency for groups holding more unorthodox opinions to be more certain of their attitudes than were less orthodox groups; he hypothesized that more reactionary groups, as well as unorthodox groups, would be more certain of their opinions.

Turning now to measures of intolerance of ambiguity, we find that neither the dog-cat test nor the intolerance of ambiguity inventory differentiated between Communists and Fascists; however, on the former both groups scored higher than the controls, and on the latter Fascists had significantly higher scores, Communists insignificantly higher scores. The related concept of rigid-

TABLE 1

Variable	F	p	Communists & Fascists t	p	Communists & Normals t	p	Fascists & Normals t	p
Radical-conservative	64.719	.001	11.265	.001	5.298	.001	7.704	.001
Tough-minded	30.272	.001	3.147	.005	3.981	.001	7.617	.001
Ethnocentrism	127.285	.001	15.088	.001	12.891	.001	4.537	.001
Fascism	137.001	.001	10.962	.001	3.770	.001	16.431	.001
Dog-cat	19.546	.001	1.630	ns	3.986	.001	5.867	.001
California rigidity	8.651	.001	1.938	ns	3.564	.001	5.894	.001
Luchina arithmetic	2.844	ns	—	—	—	—	—	—
Rokeach social maps	5.097	.01	2.935	.005	2.730	.01	.657	ns
Intolerance of ambiguity	3.117	.05	1.513	ns	.740	ns	2.487	.025
Revised tough-minded	36.652	.001	1.883	ns	5.719	.001	7.893	.001
Emphasis	46.059	.001	5.874	.001	2.794	.01	9.579	.001
Direct dominance	8.332	.001	2.597	.025	4.065	.001	1.065	ns
Indirect dominance	41.109	.001	7.301	.001	.158	ns	8.596	.001
Direct aggression	43.280	.001	7.468	.001	.197	ns	8.829	.001
Indirect aggression	53.979	.001	2.019	.05	8.204	.001	6.184	.001

ity gave the following results: Of the three tests used, only the inventory gave meaningful differences, with Communists and Fascists being more rigid than normals, and no differences between the minority groups. This confirms Adorno's finding that his authoritarians were more rigid in their ways of thinking about people than nonauthoritarians, and tended to think about them in terms of rigid dichotomies. The Rokeach social maps test did not differentiate between the groups in the expected direction, and the Luchins arithmetic test did not yield a significant F ratio, thus making the calculation of t tests improper.

On the T.A.T., Communists were found to be more dominant than the Fascists or the normals, there being no difference between these two groups. One might expect the Fascists who were more emphatic in their answers to attitude statements to be more dominant. However, it was found that the Fascists nearly always spoke in a dogmatic manner as if what they were saying were true without question. But if one argued with them in a concerted manner over some point they frequently took cover and changed the subject rather than to try to convert one to their way of thinking. The Communists, on the other hand, were more prone to stand their ground, to reiterate how wrong one was, and attempted to convert one to their way of thinking. They evinced a stronger underlying belief in their ideology. At the same time, as good party members, there was the constant objective of widening party membership by bringing in new recruits. The Fascists were not nearly as active in getting people to join their movement. They relied more on their open-air meetings for attracting new members rather than on the persuasive powers of present members.

Gough *et al.* (10) consider dominance to be a particularly important dimension in relation to political participation. They found that the dominant personality appears to move forward in a realistic, task-oriented fashion and manifests feelings of adequacy in meeting obstacles encountered. This description fits our Communist group more accurately than the Fascist group. The underlying reason probably is the difference in training in the two groups. The Communist rank and file members were thoroughly schooled in party propaganda and were provided with stock answers to almost any question. Because of this they were more fluent and more skillful at meeting obstacles. On the other hand, the Fascist party trained only certain members who are called "speakers" or propagandists. The rank and file received no training at expressing themselves on party politics at all. They read party literature, but attendance at meetings was not compulsory as it was with the Communists, nor was much pressure brought to bear on them "to spread the party word." For these

reasons they were less openly dominant. The Fascists did, of course, have some very skillful orators, but apart from these the majority of the members were untrained and were less prone to try to influence others with regard to their ideology.

This possibly accounts for the results of the *indirect* dominance variable as well. On this the Fascists were extremely high, whereas the Communists and the normals were significantly lower and there was no significant difference between the Communists and the normals. The Fascists showed a high tendency after having built up the "hero" to then allow some secondary figure to dominate the scene. Sometimes they had minor characters restraining the actions of the hero. It seemed as if they wanted to lead and control and dominate but were unable to take an outright forceful position even in their fantasy.

The normals expressed fewer dominance-submission scenes and more often demanded their autonomous rights despite parental pressures. But they were less prone to dominate in the sense of coercion. It seems reasonably certain that the findings on these two variables are related to actual behavior of the Communist and Fascist groups.

With respect to aggression, these relations were inverted. On direct aggression there was a significant difference well beyond the .001 level between Communists and Fascists, with Fascists showing by far the greater amount of hostility. The Communists were not significantly different from the normals. But on the indirect aggression or object need aggression the Communists showed significantly ($t = .025$) more aggression than the Fascists. The normals were significantly lower ($t = .001$) than either of the other two groups. All normal persons employ direct aggression to some degree throughout life. It is one of the simplest of human reactions to threat or frustration. Indirect aggression is employed also, but often the person using this method is not aware that he is, in fact, showing aggression. Spite reactions, covert maligning of someone's reputation, working against someone behind his back, martyrdom intended to make someone else feel guilty, and many other commonplace activities are actually manifestations of indirect aggression. In less degree these reactions are not serious. But when direct aggression persists as the preferred and immediate adjustive technique in the face of all difficulties, it verges on a serious personal maladjustment, in our culture, which can render the individual socially incompetent. The Fascist group as a whole are extremely aggressive, almost pathologically so, and it is probably an indication of personal inadequacy and emotional immaturity.

Both the Communists and Fascists expressed relatively more aggression than

the normals, but the Fascists tended to be more openly aggressive and the Communists more indirectly aggressive. From the information we have on our two groups it is rather interesting to examine their aggressive tendencies in the light of Dollard's (3) Frustration-Aggression hypothesis. In this theory the basic postulate is that aggression is always a consequence of frustration. One of the earliest lessons that human beings learn as a result of social living is to suppress and restrain their overtly aggressive reactions. However, these reaction tendencies are not destroyed but only delayed, manifested indirectly, or else displaced on some innocent source if they are not overtly expressed. Dollard says, "The strength of inhibition of any act of aggression varies positively with the amount of punishment anticipated to be a consequence of that act. The greater the degree of inhibition specific to a more direct act of aggression, the more probable will be the occurrence of less direct acts of aggression. There is a strong tendency for inhibited aggression to be displaced to different objects and expressed in modified forms" (3, p. 4).

The Communist Party controls the lives of its members more than is customary with most political parties. Members are required to regulate their personal lives in such a manner that they will not bring discredit on the party. Thus, strongly instigated acts of direct aggression are inhibited, and there is a tendency for an occurrence of less direct acts of aggression, the more subtle indirect aggression which is more socially acceptable and does not reflect upon the party to such an extent.

On the other hand, aggression in the Fascists was vigorous and undisguised. They were both directly and indirectly aggressive. Their overtly aggressive responses were sometimes displaced and found substitute targets in outgroups, such as Jews. Here the mechanism of ordinary social control does not operate because it was socially acceptable within the party to be antisemitic, in fact it was almost a necessity if they wished to remain secure in the group. What is the "true" cause of frustration in these individuals cannot be guessed at, but reliable case histories and extensive interviews would probably be needed to ascertain the underlying factors. The writers are not well enough acquainted with the subjects to identify such complex manifestations of aggression, but it appeared quite obvious that they were instantly ready to respond to any slight frustration with extreme hostility. They seemed to be in constant need of some person, some idea, or some group towards whom aggression might be expressed. The Communists more frequently denied identification with the aggressive act.

Fascistic aggression tended to be more asocial. They did not shrink from more brutal forms of physical aggression. It is as if they had conceived it so

often in their minds that they did not realize its stimulus value for arousing social disapproval. The average mean scores of the normals on both aggression variables were much lower. Their aggressions were more socially acceptable and more often in a sublimated form. There was very little asocial physical aggression. The main difference between the normals and the other two groups was on the intensity of expression. The normals rated more intermediate intensities and fewer ratings at the high extreme. Very seldom were any sadistic tendencies noted.

Intelligence scores were available only for the controls, who had been administered the Raven's Progressive Matrices Test. No correlations of above .3 were found with intelligence on any of the variables in question, but the significant relationships may be noted here. Intelligence correlated .23 with R, —.25 with E, and —.28 with F. There was also a negative correlation with direct aggression (—.21) and a positive one with indirect aggression (.26). With dominance the pattern was inverted (.20 and —.16 for direct and indirect dominance), but while this makes sense, neither value was statistically significant. All in all, the data do not suggest that intelligence differences between the groups would have much part to play in producing the observed differences.

Tests were intercorrelated, and factor analyses carried out, for the three groups separately. Rotation to simple structure was made for five factors in each case, although not all five could be interpreted. Four factors appeared to be interpretable in each analysis, and there is sufficient congruence between analyses to present these four factors in Table 2. Only loadings of above .3 are presented, with one exception where the value was almost reached. This choice is, of course, arbitrary, but follows custom. The factors are labelled Tough-mindedness, Rigidity, Intolerance of Ambiguity, and Indirect Aggression, respectively; it must be left to the reader to decide whether these terms are justified by the data. (N.B., the revised T score had loadings almost identical with T, and these have been omitted from the tables.)

E. DISCUSSION

The results support a number of hypotheses which interlock the work of the Californian group on the Authoritarian Personality with that of the London group on the structure of social attitudes in terms of two major dimensions, R and T. Authoritarianism appears to be closely related to tough-minded, and to be equally possible on the radical as on the conservative side of the political spectrum; the Californian writers have rightly criticized for identifying authoritarianism with right-wing attitudes, and disregarding left-

TABLE 2

Tests	Communists	Fascists	Controls
<i>Factor I: Tough-mindedness</i>			
T	.97	.99	.99
Direct dominance	.94	.55	.69
F	.71	.60	.41
Californian rigidity	.62	.45	.49
E	.46	—	.47
Intolerance of ambiguity	.33	—	.41
Indirect dominance	.63	.36	.48
Direct aggression	-.71	.31	.37
Indirect aggression	.68	—	—
<i>Factor II: Rigidity</i>			
Luchins rigidity	.70	.49	.58
Californian rigidity	.33	.35	.27
Rokeach rigidity	.70	—	.52
Indirect aggression	.34	.53	—
F	.30	.49	—
<i>Factor III: Intolerance of ambiguity</i>			
Dog-cat	.63	.36	.52
Intolerance of ambiguity	.62	.51	.70
Ethnocentrism	.34	—	—
<i>Factor IV: Indirect aggression</i>			
Indirect aggression	.66	.51	.76
Emphasis	-.53	-.59	—
Direct aggression	-.70	—	-.73
Radicalism	.33	.38	—
Indirect dominance	.32	—	—

wing authoritarianism. Our results show clearly that Communists, while holding left-wing views, also share an authoritarian outlook. Communists and Fascists, however, while both authoritarian, tough-minded, and emphatic in their views do differ importantly in that the former are less ethnocentric in their views.

On personality structure, our results agree with the Californian group in finding Communists and Fascists rigid and intolerant of ambiguity; this is important because the American work was of course not directly concerned with members of extreme parties, but rather with normal student and other groups in whom correlations between different scales were studied. It says much for the acuity of perception of Jaensch and his American followers that their results could be extrapolated to British Communist and Fascist groups.

An important and novel addition in the personality descriptions given by the American school is the finding that Communists show direct dominance and indirect aggression, while the Fascists show indirect dominance and direct aggression. Some discussion has already been given of possible interpretations

and explanations of this difference; further studies will, of course, be needed to put these on a more secure footing. In making this generalization we have relied on the results of the T.A.T., and it must be said that work on projective techniques in general does not lead one to put much faith in results obtained with their use (34). Such a pessimistic conclusion is probably more justified when we deal with global impressions; however, as measures of quite specific traits, there is perhaps somewhat more positive evidence (8, 12, 13, 14, 15, 16, 17, 18, 20, 26, 27, 28, 30), but see also Gluck (9) and Scodell and Lipetz (32). It is also notable that evidence congruent with our findings, at least in part, exists in the literature; thus Mussen (26) showed greater T.A.T. aggression and dominance needs in the more prejudiced children studied by him. Certainly there is no doubt that the behavior of our Communist and Fascist subjects, as observed closely over long periods by T. T. Coulter as an enrolled member of both parties, and as an attendant at numerous meetings, corresponds quite well with the results of the T.A.T. scores. In spite of these considerations, doubts must of course still remain as long as projective testing is not put on a stronger basis, at least as far as validity of scores is concerned.

Much doubt has been thrown on the Californian studies because of the neglect of response sets in their work. Our results suggest that this may not have been so fatal a flaw as is sometimes argued; our experimental groups were selected on the basis of party membership, not inventory responses, and yet their test scores agree well with predictions made from the framework of the Authoritarian Personality. This is an important confirmation of some of their theorizing, precisely because we have stepped outside the circular argument from the results of one scale to those from another. Altogether, our study adds confirmation to the belief that social attitudes do not grow *in vacuo*, but are part and parcel of a wider and more complex personality configuration.

F. SUMMARY

Groups of British Communists, Fascists, and Controls were administered a variety of social attitude inventories, personality inventories, and personality tests. Marked differences were found between the groups, with Communists and Fascists being more tough-minded, authoritarian, rigid, intolerant of ambiguity, and emphatic than the controls. Communists were more overtly dominant and covertly aggressive in their T.A.T. stories, Fascists more covertly dominant and overtly aggressive. Communists were the least ethnocentric group of all, Fascists the most. The influence of intelligence on scores was found to be slight. Factor analyses of the groups, done separately, produced four factors: Tough-mindedness, rigidity, intolerance of ambiguity, and

aggressiveness. Communists were more radical than controls, Fascists more conservative. It was concluded that social attitudes are intimately related to the whole structure of personality, and do not exist *in vacuo*.

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Department of Psychology
Institute of Psychiatry
De Crespigny Park
Denmark Hill
London, S. E. 5, England



"THE APPAREL OFT PROCLAIMS THE MAN": COOPERATION WITH DEVIANT AND CONVENTIONAL YOUTHS*

Hofstra University

BETH J. RAYMOND AND RHODA K. UNGER¹

A. INTRODUCTION

Studies indicate that deviance *per se* leads to mistreatment (3). Recently, new deviant sociocultural groups—e.g., hippies and black nationalists—appear to have been singled out for mistreatment (1). Brown (1) presents a long list of anecdotal evidence describing persecution. A review of the literature, however, reveals no experimental evidence to support the differential treatment of these new socially deviant subgroups although a number of studies using racial deviance as a variable have found less cooperation when a request for help emanates from a black rather than a white requester (2, 5).

The present study represents an attempt to establish social deviance as an experimental variable. The major objectives of the study were (a) to find out whether the general public reacts differentially towards individuals who appear to be members of the hippie and black nationalist subgroups as compared to their black and white conventional counterparts, (b) to determine whether the degree of ostensive similarity between the requester and the respondent is related to the degree of cooperation obtained, (c) to measure these reactions in a nonreactive social situation so that the subjects would not be influenced by the demand characteristics of the laboratory experiment (4).

The studies were conducted in naturalistic settings (various supermarkets) where different subsets of the general population could be sampled. The task chosen involved an apparently casual request so that the subjects would be unaware that they were taking part in an experiment. For the present purposes, a hippie or black nationalist was defined only in terms of differences from the norm in hair style and attire. These are cues which should lead the observer to infer that the individual belongs to a deviant subculture, whether black or

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white. Specifically, it is hypothesized that individuals dressed in deviant attire, regardless of race, will receive less cooperation than their conventional counterparts. Cooperation was operationally defined as the willingness of subjects to comply with a request for change. Furthermore, Brown (1) has indicated that hippies and black nationalists see similarities between their groups; however, it is questionable whether the general public considers the two groups similar in deviance and differentiates them from their black and white conventional counterparts in the same way. If this is so, then no interaction between race and deviance is expected.

In order to meet the objective outlined earlier that Ss be unaware of participating in an experiment, it was impossible to determine anything about the subjects' values and beliefs although this information might contribute to an understanding of their behavior. Instead, only such surface characteristics of the Ss as sex, race, and age were noted in order to determine the relationship between these variables and cooperation.

B. EXPERIMENT I

I. Method

a. Confederates. Two male undergraduate psychology majors at Hofstra University, aged 20 and 22, one black, the other white were used as stimuli. There were four different experimental conditions: 1) White, conventionally dressed; 2) Black, conventionally dressed; 3) white dressed in Hippie garb and hair-do; 4) Black dressed in "Afro" garb and hair-do.

Conventional appearance included business suit and tie, short and neatly combed hair, and black-rimmed prescription eyeglasses. Deviant appearance included, for the white confederate, an embroidered outershirt, bell-bottom pants, beads and sandals, a shoulder-length wig of unruly, uncombed hair, a head-band and dark sunglasses with metal frames. For the black confederate, deviant appearance included a colorful dashiki over bell-bottom pants, sneakers, a medallion around his neck, one earring, an Afro wig, and dark sunglasses with metal frames.

b. Subjects. Subjects were approached as they were leaving a supermarket. Every third person was approached if the preceding subject was out of earshot. Otherwise, the confederate waited until the S was out of earshot and then approached the next S. Subjects were approached without regard to age, sex, or race. A total of 581 individuals was approached.

c. Location. The study was conducted in a number of shopping centers in central Nassau County, Long Island, New York. The shopping centers were

selected according to the following criteria: 1) they served communities which were largely of middle or lower-middle socioeconomic level as measured by a 1969 survey of the Nassau County Youth Board; 2) they served communities with both black and white residents as indicated by information from the Nassau County Youth Board; 3) each shopping center contained a large supermarket with access through a public parking lot.

d. Procedure. Each data collection session lasted one and one half hours. The four different experimental conditions were counterbalanced so that each shopping center was sampled once under each condition. Each shopping center was sampled during two consecutive days in order to avoid repeated sampling of Ss. It was assumed that individuals rarely visit the same market during two consecutive days. The sequence of conditions, time of day, and day of the week were counterbalanced for the various shopping centers. Six areas were sampled.

The confederate approached the subject and said "Excuse me, do you have two nickels for a dime?" or, alternately, "Excuse me, do you have a dime for two nickels?" No information was provided as to why the change was necessary. The variation in requests was introduced in order to prevent the confederate from accumulating a large number of coins. The change was held in his open, outstretched hand. The question was always asked in well-practiced, neutral tones.

After leaving the subject, the confederate unobtrusively noted on a small data pad: 1) whether or not the S had cooperated—i.e., looked for change, 2) S's sex, 3) race, 4) approximate age. He then waited for two more individuals to leave the market and approached the third subject.

2. Results

The amount of cooperation (in percentages) received in each of the four conditions was Conventional-White, 82%; Conventional-Black, 72%; Deviant-White, 60%; Deviant-Black, 54% (Table 1).

TABLE 1
PERCENTAGE OF Ss IN EXPERIMENTS I, II, AND III COOPER
THE FOUR EXPERIMENTAL CONDITIONS

Experimenters	Exper. I (N = 581) White Ss	Exper. II (N = Black Ss	OF	
			Under 30	Over 30
Conventional				
White	82	80	95	91
Black	72	70	82	75
Deviant				
White	60	60	88	66
Black	54	81	85	55

Chi-square tests with one degree of freedom were used to analyze the data. Therefore, for each result, only the p value is reported. The first question was whether black and white deviants were treated similarly by the population sampled (80% white). The interaction, Deviance \times Race, $p > .05$, was not significant. The white deviant received 22% less cooperation than his conventional counterpart; the black deviant received 18% less cooperation than his conventional counterpart. Proportionately, these were reductions of 27% and 25%, respectively. Therefore, the data were pooled and the main effects of Deviance and Race were analyzed. The effects of Deviance, $p < .0005$ and Race, $p < .05$ indicated that while both were significant, deviance played a more important role. Conventional confederates received more cooperation than deviant confederates and the white confederate received more cooperation than the black confederate.

The association between subject's sex and cooperation with deviant and conventional confederates was examined. When the confederates were conventional, there were no differences in cooperation between male and female subjects, (81% *vs.* 77%), $p > .05$. The deviant confederates, however, received more cooperation from males than females (67% *vs.* 51%), $p < .05$. Male and female subjects did not differ from each other in cooperating with confederates of different races.

C. EXPERIMENT II

The relationship between the S 's race and cooperation could not be analyzed in Experiment I because the proportion of black subjects approached was small (20%). It did appear, however, that black S s were more cooperative with the black deviant than with the conventional black confederate (70% and 56% cooperation, respectively). Experiment II was conducted in order to determine the relationship between cooperation and the race of the subjects. The same four experimental conditions were used as in Experiment I, but with black S s exclusively.

1. Method

The confederates and procedure were the same as in Experiment I. The criteria for selecting the four shopping centers used here were the same as in Experiment I except that markets were chosen which served a relatively large number of black customers. A total of 207 black S s were approached.

2. Results

The percentage of blacks who cooperated in each of the four conditions was Deviant-Black, 81%; Conventional-White, 80%; Conventional-Black, 70%; Deviant-White, 60% (Table 1). The percentage of cooperation in the last

three conditions corresponds almost perfectly with the cooperation given in these conditions in Experiment I, which predominantly included white Ss. The only difference between the black and white subjects was in the degree of cooperation given the black deviant: 81% in Experiment II as compared to 54% in Experiment I. The interaction, Deviance \times Race, which was not significant in Experiment I, approached significance, $.05 < p < .10$. The white deviant received 20% less cooperation than his conventional counterpart; the black deviant received 11% more cooperation than his conventional counterpart. Proportionately, this was a reduction of 25% and an increase of 16% respectively. White Ss in Experiment I declined to cooperate with black and white deviants with equal frequency. Black Ss, however, distinguished between the two kinds of deviants, treating the black deviant more positively.

Due to the size of the interaction, separate analyses were performed on the simple main effects. The question of whether deviance, within each race, influenced cooperation may thus be answered. For the black confederate deviance did not affect cooperation, $p > .05$, while deviance significantly reduced cooperation with the white confederate, $p < .05$.

D. EXPERIMENT III

The purpose of the third study was to determine the relationship between Ss' ages and their cooperation with confederates who vary in apparent deviance. Individuals under 30 may be more cooperative with all confederates simply because of the similarity in age. However, if a generation gap exists in response towards deviance, Ss under 30 should not differ in cooperation with deviant and conventional confederates while Ss over 30 should be less cooperative with deviant confederates than with the conventional confederates. The same four experimental conditions were used as in Experiments I and II. Subjects were approached and classified, on the basis of appearance, as either under 30 or over 30.

1. Method

The confederates and procedure were the same as in Experiment I. The criteria for selecting the four supermarkets used here were the same as in Experiment I, except only white Ss were sampled. An equal number of Ss above and below the estimated age of 30 were approached in each experimental condition. A total of 480 Ss was approached.

2. Results

There was no difference in cooperation with the conventional confederates for the different aged subjects, $p > .05$. There was a difference between the

age groups when the confederates were deviant, $p < .0005$. Subjects under 30 were more cooperative with the deviant confederates than subjects over 30 were. The effects of deviance were the same regardless of the race of the confederate; therefore, only pooled results are reported.

The relationship between the confederate's race and cooperation (regardless of deviance) was analyzed for the Under 30 and Over 30 subjects: Under 30, $p > .05$; Over < 30 , $p < .05$. For the Ss over 30, the association of race and cooperation appears considerably smaller than the effects of deviance. For the Ss under 30, both race and deviance appear to have little relationship with degree of cooperation. The overall cooperation in each of the four conditions was in the same order as in Experiment I although the absolute level of cooperation was somewhat higher. This study was conducted just before Christmas; the holiday spirit may have prevailed.

E. DISCUSSION

Data on over 1200 subjects demonstrated significant differences in cooperation with deviant and conventional members of both black and white racial groups. Cooperation varied, however, according to which subset of the population was sampled. White subjects responded to deviance as a negative attribute without regard to the deviant's race. Both black and white deviants received about the same reduction in cooperation as compared to their conventional counterparts. Black subjects, however, differentiated between the two kinds of deviance. They declined to cooperate with the white deviant to the same degree as the white subjects did, but showed an increase in cooperation with the black deviant. Although some members of both white and black deviant groups have ascribed similarities to the two groups, whether or not this relationship was recognized depended upon which part of the population was sampled.

The results of these experiments are generally consistent with a series of studies reported by Rokeach and Mezei (6). The major finding of these studies was that differences in belief were more important determinants of discrimination than differences in race. In situations involving social choice, subjects chose those persons who agreed with them regardless of race more often than they chose persons of the same race regardless of whether or not they agreed with them.

To draw a parallel to the present study, the white Ss may perceive the black and white deviants as holding beliefs incongruent with their own. According to Sarbin (7) and Brown (1) the differences in personal style of these deviants may lead the observer to infer differences from himself in terms of

health and sanitation habits, sexual behavior, and drug usage. The white Ss may have cooperated more frequently with black and white conventionals because they perceived them to have values commensurate with their own.

The black Ss also treat the white deviant less favorably than the white conventional. Rokeach and Mezei (6) have shown that black subjects responded in interpersonal selection procedures in a way that was indistinguishable from white subjects. The present data may indicate that black and white Ss share many beliefs and values which the white deviant apparently rejects. Most interesting, however, is that black Ss did not treat the black deviant negatively. These data may indicate that the black community does not find the inferred values of the apparent black nationalist incongruent with their own.

The results of Experiment III which demonstrate that young people, in contrast to older Ss, do not cooperate differentially with deviant and conventional individuals may also be explained in terms of inferred similarity of values and beliefs between younger Ss and confederates of the same age group.

Although deviance was the most important determinant of cooperation, the race of the requesters was related to cooperation only for the white Ss. In the absence of any information about beliefs, white Ss over 30 may infer that the individual is unlike them. These findings are consistent with those of Stein, Hardyck, and Smith (8) in which subjects reacted in terms of race only when they had no information about beliefs.

An alteration only in appearance and apparel yielded significant differences in the degree to which certain subgroups of the population were willing to cooperate when a relatively simple request was made. These results were explained with reference to the importance of belief and value congruity as suggested by Rokeach's theory. Whether the values of these deviants are, in fact, different from those held by the subjects sampled here or whether these Ss actually believe the deviant's values to be incongruent with their own are both future experimental questions.

F. SUMMARY

Three studies were conducted in order to determine whether black and white youths, dressed so as to appear to be a black nationalist or hippie, would receive differential treatment as compared to their conventionally dressed black and white counterparts. These individuals requested an exchange of two nickels for a dime (or *vice versa*) from persons leaving a supermarket. Experiment I demonstrated that white subjects were less likely to comply with the requests of both black and white deviants than with the requests of their con-

ventional counterparts. Experiment II demonstrated that black subjects cooperated with the white deviant to the same extent as the white subjects did; however, they cooperated more with the black deviant. Experiment III showed that persons over 30 were less cooperative with deviants than those under 30. The results were explained in terms of Rokeach's theory of belief congruity.

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Department of Psychology

Hofstra University

Hempstead, Long Island, New York 11550

THE EFFECTS OF UTILITY OF INFORMATION AND INTENT ON INTERPERSONAL ESTEEM*¹

University of Toronto

ABRAHAM S. ROSS AND PAULINE WILSON²

A. INTRODUCTION

All of us, at one time or another, have found ourselves in the dilemma of not knowing whether to judge a person in terms of his actions or in terms of his intentions. How we judge the other person will determine how we react to him. While some studies have found that college students who have received help from another student are more likely to reciprocate (2, 6), other studies have found that unrequested aid has led to reactance and reduced reciprocity (1, 3, 7). Schopler and Thompson (7) found that merely being the recipient of aid is not sufficient to induce reciprocity, the motives of the donor affect whether or not reciprocity will occur. Although they did not manipulate the perception of the donor's intentions, their data suggest that when a favor is perceived as not being motivated by the donor's needs but rather by the recipient's needs, reciprocation is maximal.

An experiment by Pepitone and Sherberg (5) supports the hypothesis that a person is attracted to someone who has good intentions. Pepitone (4) has considered intentionality as one of the three dimensions which affects attractiveness of people. Although Pepitone did not investigate the outcome of the action which the person intended, it may be a relevant variable and, indeed, might be as important as intentions in certain circumstances.

It is hypothesized that whether we evaluate a person on the basis of his intentions or the outcome of his actions will depend on the importance of the situation. It was predicted that in an important situation the utility of a person's actions will be the major dimension of evaluation and thus there should be greater differences in liking between different levels of utility than between different levels of intent. In an unimportant situation there should be greater differences between levels of intent than between levels of utility. These differences in liking, or positive feeling should also be reflected in reciprocation of the favor.

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² Now at University of Minnesota.

B. METHOD

1. Subjects

Fifty-six female students, drawn from a pool of students taking introductory psychology, were randomly assigned to eight experimental conditions.³

2. Procedure

a. Experimental Task. Subjects were faced with an apparatus which had six digital read-out cells facing them and six cells facing away from them. Over each of the cells facing them was a red light, under each was a push button. Their task was to determine in which of the cells the highest of the six digits would appear on each trial. On any trial the red lights over the cells would indicate which of the cells they could choose from; when the button was pressed below their choice a digit appeared in each cell and the subject could score herself as to rights and wrongs.

The six cells facing away from the subject were always lighted and contained digits which corresponded to those facing the subject. These cells could not be seen by the subject, but could be seen by anyone in the next room looking through a one-way mirror. The digits which appeared on any trial were randomly chosen, making success at the task virtually a matter of chance.

b. Importance-manipulation. Before the experimental task was explained to the subject and to a confederate posing as a subject, subjects in the Important condition were told that the results of the test they were about to take had correlated over the past three years with final course grades both at this school and at others and that the students' final grades were to be "supplemented" by their scores on this test. Other explanations were included to increase the plausibility of this manipulation. In the Low Importance condition the subjects were told that this test was designed to correlate with grades but had failed to do so. They were being run as subjects simply to fulfill the experimenter's contract with the agency who had supplied funds for the construction of the test. The task was then explained to the subject.

Before the start of the task, the subject and confederate were led into an adjoining room from which the six lighted rear read-out cells were visible. One person's task was to sit in this room and tell the person taking the test, via an intercom, when to start and stop. The working of the intercom was then explained to both subject and confederate. By drawing numbers the subject always became the first testee, with the understanding that she would do the timing when the confederate took the test.

³ Of an original 64 subjects, eight had to be discarded because of suspicion. These subjects were evenly distributed throughout the eight experimental conditions.

c. Intention-manipulation. After leaving the confederate in the timing room and the subject in the test room, the experimenter returned to the control room. On test trials 4, 6, 8, and 9, in addition to telling the subject to start the trial, the confederate gave the subject information about what she could see in the windows on her side: e.g., "The third window has the highest number." In the Good Intention condition the information given was always correct. In the Bad Intention condition it was always wrong. Since all digits appeared after pressing any one button, the subject had an opportunity to see that she had been misled in the Bad Intention condition.

d. Utility-manipulation. Utility of the information was manipulated by the red lights. The confederate's information was useful if the answer given by the confederate was amongst the windows with a red light on over it. If it had no red light it was not an available alternative and therefore useless.

For the Bad-Intent Useful condition, there were two lights on for the critical trials, and the answer that the confederate gave was always the one of those two windows which contained the lower—i.e., incorrect digit; it was assumed that, at first, the subject would choose the window that the confederate told her to choose, but later she would learn to choose the opposite. Although this information carried bad intentions, it was nevertheless useful to the subject.

e. Dependent measure. After the subject completed the task she was asked to fill out a confidential questionnaire for the psychology department about the experimenter and any other subjects present during the experiment. While she filled out the questionnaire the confederate was engaged in a seemingly unrelated task in another part of the room. The confederate and subject then reversed roles, with the confederate taking the test and the subject acting as timer. The dependent measures were the questionnaire answers and the number of answers given to the confederate by the subject.

C. RESULTS

The score which a subject obtained while performing the numerical sequence task constitutes a check on the manipulation of utility. If utility is being successfully manipulated, subjects in the Useful condition should obtain higher scores than subjects in the Useless condition. The difference between the number of correct answers in the Useful and Useless condition is significant ($F = 6.62$, $df = 1/48$, $p < .05$). However, the subjects in the Good Intentioned condition got significantly more correct answers than did subjects in the Bad Intentioned condition ($F = 8.56$, $df = 1/48$, $p < .01$). The interaction of Importance and Utility is also significant ($F = 4.92$, $df = 1/48$,

$p < .05$). The difference between the conditions of intent probably occurred because subjects in the Bad-Intention condition must have made at least one incorrect response (when following the confederate-first false answer) before learning to respond to the opposite of what the confederate said. The interaction is puzzling and no reason is offered. It does appear, however, that the manipulation of utility was effective.

To test the original hypotheses, a series of orthogonal contrasts were constructed which compared: (a) the effects of utility within the High Importance condition, (b) the effects of intentions within the High Importance condition, (c) the interaction between utility and intentions within the High Importance condition, (d) the effects of utility, the effects of intentions, and the interaction between utility and intentions within the Low Importance condition.⁴

Table 1 presents the number of answers that the subject gave the confederate.⁵ A significant difference between the Useful and Useless conditions

TABLE 1
MEAN NUMBER OF ANSWERS GIVEN TO THE EXPERIMENTAL CONFEDERATE BY
THE SUBJECT AS A FUNCTION OF VALUE OF INFORMATION AND INTENTIONS

Intent	High importance		Low importance	
	Information Useful	Useless	Information Useful	Useless
Good	4.6	.3	.9	1.3
Bad	.6	1.6	.4	0.0

in the High-Importance condition and not in the Low-Importance condition was predicted, as was a significant difference between the Good- and Bad-Intention condition in the Low-Importance condition and not in the High-Importance condition.

In the High-Importance condition all contrasts are significant: the person who had good intentions was given significantly more answers than the person who had bad intentions ($F = 4.29$, $df = 1/48$, $p < .05$); the person who gave useful information was given more answers than the person who gave useless information ($F = 6.41$, $df = 1/48$, $p < .025$) and the interaction of utility and intent is significant ($F = 16.54$, $df = 1/48$, $p < .01$).

In the Low-Importance condition none of the contrasts is significant. The questionnaire ratings of the confederate are unrelated to experimental con-

⁴ These are two separate 2×2 analyses of variance but with the use of a within group variance based on the entire sample as an error term.

⁵ No one gave the confederate incorrect answers.

ditions. None of the ratings taken individually or summed over the entire questionnaire, when analyzed by conditions, reaches a conventional level of significance.

D. DISCUSSION

On the basis of the results of the questionnaire and the answers given, it appears that in this experiment, when the situation was unimportant, it did not matter whether the other person's information was useful or not, nor what her intentions were; since the situation was unimportant, the helping was not reciprocated. When the situation was important, reciprocation occurred if the help given was useful and if the person offered it with good intentions. If both these conditions were not satisfied, reciprocity did not occur. This latter result agrees with Schopler and Thompson's results. Unfortunately, the questionnaire data do not allow us to interpret the sentiments underlying these actions. The lack of results from the questionnaires is not surprising in light of similar results in Schopler and Thompson (7) and Brehm and Cole (1) where it was found that the appropriateness of a favor bestowed was reflected in reciprocity measures, but was not reflected in ratings of liking for the donor.

One final note concerns the significant interaction for answers given in the Important condition. This interaction was not predicted and is primarily due to the large number of answers given in the Bad-Intent, Useless information condition. A great number of answers may have been given in this condition because the confederate's answers were so confused that it may have appeared that rather than having bad intentions, the confederate was simply stupid or confused and needed all the help she could get.

E. SUMMARY

An experiment was done to determine the effect of a person's intentions and the utility of his actions on judgments of him. The subject, while engaged in a multiple-choice problem-solving task which was either important or not important to her classroom grade, was given unsolicited help by a confederate. In one condition the confederate gave the subject correct answers (Good Intent), and in the other she gave the subject incorrect answers (Bad Intent). Manipulation of the alternative answers available to the subject made the information either useful or useless. The results indicate that when the situation was unimportant, it did not matter whether the confederate's information was useful or not, nor what her intentions were; since the situation was unimportant the helping was not reciprocated. When the situation was important reciprocation occurred if the help given was useful and if the person offered

it with good intentions. If both these conditions were not satisfied reciprocation did not occur.

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Department of Psychology
Scarboro College
University of Toronto
West Hill, Ontario, Canada

RECIPROCITY FOR HARM DONE* 1 2

State University of New York at Albany

BOB HELM, THOMAS V. BONOMA, AND JAMES T. TEDESCHI

A. INTRODUCTION

Gouldner (12) has postulated the existence of a universal norm of reciprocity which stipulates that (a) people should help those who help them, and (b) people should not injure those who have helped them (12, p. 171). As this formulation of the norm implies, Gouldner concentrated his theoretical efforts upon the functioning of a *positive* norm of reciprocity. Subsequent investigations with American college student populations have shown that subjects will reciprocate help given to them (2), especially when such help is perceived as voluntarily offered (11). Furthermore, the available evidence indicates that the positive norm of reciprocity functions with both social reinforcers (6) and with tangible benefits (1, 16). Each of these studies has focused exclusively on *amounts* of help rendered rather than upon the frequency of occasions on which help was offered or given. Equity theory (1) has been especially concerned with the calibration of amounts of rewards reciprocated and/or divided by the parties of social interaction.

Great schools of criminal law have sprung from controversies regarding the uses of punishment in response to legal transgressions. The principle of *Lex Talionis* was the formula of the Old Testament—an eye for an eye, and a tooth for a tooth. Legal penalties in all countries are still affected by the desire for revenge, scaled so that the punishment will “fit” the crime. Indeed, Gouldner (12), albeit only in passing, did suggest a *negative* norm of reciprocity. This negative norm is often considered as especially important in international relations. Pruitt (17) has underscored the norm of negative reciprocity as a basic “rule of thumb” in understanding the complexities of international law.

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Despite the importance of the negative norm of reciprocity from an historical point of view, Taylor (19) has indicated that there has been a conspicuous lack of experimentation bearing on the relationship between physical attack and counteraggression. Volumes have been written on the topic of aggression, but little follow up has ensued since Huss stated that "the antecedent event most likely to elicit aggression is an attack" (8, p. 38). A reciprocity point of view would postulate that persons will harm those who harm them and will not help those who injure them. A series of investigations by Taylor and his colleagues (10, 13, 18, 19) have shown that individuals do calibrate the amount of reciprocated harm. The intensity of counteraggression is proportional to the original aggression.

The procedures of a research paradigm utilized by Berkowitz (3, 4, 5) required that a subject and a confederate write public relations ideas for selling products and then rate each other's essays by delivering from one to seven shocks to the other person. First, the confederate gave the subject either one or seven shocks. Then, the subjects "rated" the confederate. Although Berkowitz ignored the reciprocity results in his studies, subjects returned two or three shocks when they received one or they reciprocated five or six shocks when they received seven from the confederate. The present study attempts to confirm that subjects do calibrate the frequency of harm rendered when the negative norm of reciprocity is invoked.

Unlike the Taylor studies, the present one does not place subjects in zero-sum conflict in which one or the other person *must* receive shock. Nor are subjects asked to use shock as a basis of a "rating" as in the Berkowitz studies. Instead, subjects were asked to estimate the probability that an alleged peer (the "operator") would shock them when a light illuminated. The confederate "operator" was clearly instructed in the presence of the subject that he had the option to shock the subject or not, as he pleased. The confederate actually did shock the subject one, five, or nine times out of 10 trials. The subject was then placed in the role of "operator" and the confederate was placed in the role of "estimator." Thus any counteraggressive responses by the subject would be a function of a negative reciprocity norm and not demand characteristics of the experiment.

It was not clear whether foreknowledge of a shift of roles would be important in determining the calibration of reciprocity. Therefore, the subjects and confederates were either preinformed of the impending change in roles or they were not. Hence, the experiment was a 3×2 design.

The hypotheses guiding the study were (a) the more frequently the confederate shocked the subject, the more frequently the subject would shock the

confederate; and (b) the subject's impressions of the confederate were expected to vary as a function of initial shock frequency. More specifically, it was expected that the more shocks used by the confederate, the more active and potent he would be perceived to be, but also the lower he would be evaluated and the more he would be disliked.

B. METHOD

1. *Subjects and Experimental Personnel*

Sixty white male subjects at the State University of New York at Albany received experimental credits and partially fulfilled the requirements of introductory psychology courses by their participation. Ten subjects were assigned (in order of appearance) to each of the six cells of the experimental design.

Seven male psychology graduate students served as confederates, and each confederate served approximately equally often in each cell of the design. Three female upperclass psychology majors served as experimenters. It was felt that the presence of female experimenters would decrease subjects' trepidation and subsequent refusal to participate in an experiment employing electric shock.

2. *Apparatus*

The apparatus consisted of a set of finger electrodes, a Foringer shock generator (Model No. 1154M11), a pair of white lights, and a fully automated contingency timer. One white light and the finger electrodes were placed at one end of the experimental table, while the shock generator, the second white light, and the timing apparatus were placed at the other end of the table. Subject and confederate were separated by a three-foot high partition placed in the center of the table. The timer was preset so that all shock options were of three seconds duration, with a 15-second intertrial interval. The shock generator was calibrated to deliver a 15 milliamp shock when a button on its face was depressed. The shocks, while unpleasant, were not of an intensity that was painful to subjects. Of course, the actual shock level experienced by each subject was a variable function of his momentary resistance level.

3. *Procedure*

Both the subject and a confederate were in the waiting room when the experimenter arrived and asked them to follow her. Just before entering the experimental room, she informed them that the experiment involved mild

electric shock and that they could refuse to participate but still obtain credit for appearing for the experiment. If both individuals agreed to continue, they were informed that the experiment was concerned with estimation of the probability of receiving shock. A sham drawing determined that the subject would be the "estimator" and that the confederate would be the "operator" of the apparatus. In the foreknowledge conditions, subjects and confederates were informed that they would exchange roles during the experiment.

Ring electrodes were slipped onto two fingers of the subject's nondominant hand and he was instructed to estimate the probability that the "other subject" would shock him each time the white light before him was illuminated. Subjects were instructed to make each estimate in terms of whole percentage numbers from 0% (believe that the operator will certainly not shock you the next time the white light comes on) to 100% (believe that the operator will certainly shock you the next time the white light comes on). The subject was told that he would have 15 seconds within which to make each estimation. The white light illuminated for three seconds, following which there was another 15-second interval during which the subject was to make his next estimation. The confederate was then instructed about how to deliver the shock, if he should choose to exercise that option. The instructions to the confederate were given in the presence of the subject and clearly indicated that the confederate could choose to shock the subject or not whenever the white light came on, and that he would have three seconds during which to exercise his options. In the foreknowledge conditions, the experimenter again reminded the two persons that they would switch positions after the first interaction period. Then the experimenter activated the timing device, told the subject to make his first estimation, and left the experimental room to monitor events from a control room equipped with a one-way mirror.

For the first 10 trials, shocks were delivered by the confederate according to one of three frequency schedules: on only the 5th shock-option trial (10% group), on the 1st, 4th, 6th, 7th, and 10th trials (50% group), or on all but the 5th trial (90% group). Following the 10th shock-option trial in all conditions, the experimenter re-entered the room and asked the participants to change roles (the subject became the "operator," the confederate became the "estimator"). Instructions to both operator and estimator were reviewed, and the subject was requested to record the number of shocks he delivered to the confederate estimator, as well as the trial on which they were delivered. It was emphasized to the subject that he could choose to shock or not shock the "other subject" on each trial as he wished. As a check on the subject's recording accuracy, the confederate also maintained a record of shocks received during the reciprocity trials. Ten reciprocity trials were run in all conditions.

Following the experimental trials, subjects were removed to individual testing cubicles and administered a form of the Interpersonal Judgment Survey, IJS (9) from which attraction and esteem ratings of the confederate were obtained, as well as a shortened form of the Semantic Differential (15), on which impressions of both self and "other" were obtained on three sub-scales of Evaluation, Activity, and Potency.

All subjects were thoroughly debriefed, and an effort was made by the experimenter, before dismissing subjects, to assure that no subjects felt either anxiety or fear as a result of receiving electric shock.

C. RESULTS

1. Reciprocity Behavior

A 3×2 analysis of variance was performed on the frequency of shocks delivered by subjects when they served in the role of "operator." The frequency with which the confederate delivered shocks to the subjects produced a main effect on this measure of counteraggression ($F = 33.02$, $df = 2/54$, $p < .001$). Duncan range tests indicated that subjects in the 90% frequency condition shocked the confederate more frequently than subjects in the 50% condition ($R_3 = .105$, $p < .10$), who in turn shocked the confederate more often than subjects in the 10% condition ($R_2 = .215$, $p < .001$). The means are shown in Table 1. Neither foreknowledge of the role change nor the interaction affected the reciprocity behavior of the subjects.

In the Berkowitz studies, subjects returned more harm than they received

TABLE 1
MEANS FOR THREE SHOCK PROBABILITY GROUPS

Measure	10%	50%	90%
Reciprocated shock	.210	.425	.550
Attraction (IJS)	10.300	10.200	8.250
Esteem (IJS)	10.600	9.950	9.000
Evaluation of confederate (Semantic Differential)	+6.650	+3.500	-0.400
Activity of confederate (Semantic Differential)	-3.050	-1.400	+0.300
Potency of confederate (Semantic Differential)	-4.900	-0.850	+4.300

when the frequency of aggression was very low and returned less harm than they received when the frequency of original aggression was high. Table 1 shows that the means in the present study apparently resulted from the operation of the same principle.

Comparisons of the obtained proportions of reciprocity behavior (i.e., number of times the subjects shocked the confederate over the number of trials) with the proportion of aggressive behavior by the confederate were made. Results indicated that subjects in the 10% aggression groups delivered significantly more shocks to the confederate than the confederate administered to the subject ($z = 1.81, p < .07$). Subjects who were aggressed against 90% of the time reciprocated less harm than they received ($z = 6.09, p < .001$). Only in the 50% condition was the reciprocity rather precisely calibrated to the initial level of aggression by the confederate ($z < 1$).

Inspection of the mean probability estimates of the subjects over all trials when they were the targets of aggression surprisingly indicated no effects of either independent variable. None of the means was significantly different from 50%, indicating that the probability estimation task may have been similar to coin tossing for the subjects, who apparently had no more reason to expect to be harmed than not to be harmed. A correlation between subjects' mean probability estimates and the frequency of counteraggression indicated no relationship between the two variables ($r = .17, p > .10$).

2. *Interpersonal Impressions*

Postinteraction impressions of the confederate "operator" were systematically affected by the number of shocks mediated. Frequency main effects were found on the liking ($F = 8.11, df = 2/54, p < .01$) and esteem ($F = 4.74, df = 2/54, p < .001$) measures obtained on the Interpersonal Judgment Scale^a and on the potency ($F = 38.49, df = 2/54, p < .001$), activity ($F = 5.04, df = 2/54, p < .01$), and evaluative ($F = 22.94, df = 2/54, p < .001$) dimensions of the Semantic Differential. The means can be seen in Table 1, and are perfectly ordered in each case—the "operator" is better liked, esteemed more, and perceived as less active and potent the less frequently he mediated shock. However, Duncan range tests indicated that some comparisons were not significantly different. Subjects rated the "operator" who shocked them 90% of the time as less liked than did subjects facing less frequent shock ($p < .05$). Differences in esteem and activity were significantly

^a Items concerning intelligence and respect were added together to obtain a score for esteem. The esteem measure is more fully described and validated in a study by Tedeschi (20).

associated only with the two extremes of shock frequency. The "operator" who shocked the subjects least was perceived as more esteemed and inactive than was an "operator" who shocked the subject 90% of the time ($p < .05$). All of the comparisons on the evaluative and potency dimensions were significant ($p < .05$). Foreknowledge of role reversal had no significant effects on any of the posttest measures (all $p > .10$).

D. DISCUSSION

Although counteraggression was not calibrated so that the punishment perfectly matched the provocation, the results of the study strongly supported the hypothesis that subjects will respond to aggression on a frequency basis. Thus, the evidence garnered from the Berkowitz, *et al.* studies has been cross-validated and extended. The fact that subjects overpunished the operator who delivered shocks 10% of the time and underpunished the operator who delivered shocks 90% of the time is curious but reliable, particularly since the same phenomenon can be seen in the Berkowitz data. No convincing *post hoc* hypothesis can be offered for these calibration "errors," except perhaps to indicate that subjects may simply prefer something other than extreme values whether making perceptual judgments, attitudinal commitments, or in determining how often to shock someone who invites reciprocity of harm.

The subjects' failure to discriminate between shock probability conditions was indicated by the fact that they did not differ in making estimations of the probability that the "operator" would shock them. Apparently, when no discernable basis exists for inferring another's intentions, that person may be perceived as making his decisions on the basis of chance. In the present situation the operator had no apparent reason to want to harm the subject. Yet, the experimenter gave the operator an option to deliver electric shocks to the subject. What the experimenter desired for the operator to do was completely ambiguous. Under the circumstances there was no real basis for an informed guess about what the operator would in fact do. Even when the operator shocked the subject frequently, the former's behavior apparently added little information to the trial-by-trial probability estimations of the latter.

The counteraggressive behavior of the subjects was calibrated to the harm done to them and not to their estimations of the probability that harm would be perpetrated against them. The correlation between these two variables was near zero and may be interpreted as indicating that a person deals with the world as it is currently perceived rather than according to previous, uninformed anticipations about it. The major finding that the negative reciprocity norm applies not only to magnitude of harm but also to frequency extends the

generalization that can be made for the norm. In the present situation, where initial aggression by the confederate was unprovoked, (i.e., noncontingent) and a second role reversal was not anticipated by the subjects, it seems likely that the counteraggression was employed for revenge rather than as a counter-deterrent. Perhaps such an interpretation accounts for retaliation on a frequency (tit-for-tat) basis. Of course, these results indicate that a frequency notion of a positive norm of reciprocity should be tested and suggest that both magnitude and frequency may be reciprocated when both factors are inflicted by a harm-doer.

It is difficult to interpret whether the interpersonal impressions formed over the interaction period were a function of what the operators did to the subjects or what the subjects did to the operators, or both. Obviously, it would be easier simply to state that both factors were probably involved. However, an allied study (7) using the same manipulations as the present experiment except that the subjects did not receive an opportunity of changing roles with the operator, revealed exactly the same pattern of impressions. Again, this information is damaging to a catharsis hypothesis of aggression. Some expiation of dislike for and perhaps some of the perceived potency of the harm-doer should presumably occur as a function of having the opportunity to retaliate in kind. Whether or not the subjects received an opportunity to reciprocate, they perceived the frequent harm-doer as potent and active, but disliked, disapproved, and held him in lower esteem. Not only is counteraggression by subjects calibrated to the frequency of harm perpetrated by the harm-doer but so are their impressions of him. The less often he harms them (proportional to the number of opportunities he has to do them harm), the more they like, approve, and esteem him, but the less active and potent he is perceived to be. It is clear that the exercise of noncontingent punitive power is incompatible with friendly and cordial relations.

In conclusion, it can be said that, for the population under study, the evidence supports a negative norm of reciprocity that not only asserts "an eye for an eye" but also stipulates a tit-for-tat retaliation in terms of frequency as well. Perhaps the speculation by such strategic thinkers as Herman Khan (14) that nuclear retaliation can be scaled on a city for city basis is not so far-fetched, as incredulous as it may seem.

E. SUMMARY

Sixty males received either one, five, or nine electric shocks of varying magnitude from a confederate during a 10-trial probability estimation task. Following initial trials, subject and confederate reversed roles, and subjects

were permitted equal opportunity to counteraggress against the confederate. One-half the subjects had been forewarned of role reversal, while the remainder had not. Results indicated that frequency of reciprocated shock (counteraggression) was a direct and linear function of frequency of initial aggression delivered. Postimpressions of the confederate indicated that frequent aggressors were perceived as less attractive and esteemed than infrequent aggressors, but as more active and potent. The evidence thus indicates that, for the population studied, a norm of negative reciprocity which operates on a frequency basis has been demonstrated.

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Department of Psychology

State University of New York at Albany

1400 Washington Avenue

Albany, New York 12203

GROUP COHESIVENESS, PRODUCTIVITY, AND STRENGTH OF FORMAL LEADERSHIP*¹

Ohio University

JOHN E. STINSON² AND E. T. HELLEBRANDT

A. INTRODUCTION

This paper reports research designed to provide additional insight into the relationship between group cohesiveness and group productivity. While considerable research has been conducted in the area, much of the research has not been tested in operating organizations. This lack seems to result from the assumptions held by some popular American theorists, especially those concerned with the impact of leadership style on the relationship between cohesiveness and productivity.

Stogdill (7) developed an open systems theory of small-group behavior that classified cohesiveness and productivity as two outputs of work group activities. On the basis of a thorough review of research available at that time, he concluded that, under routine operating conditions, cohesiveness and productivity are negatively correlated.

Much of the popular literature on group dynamics, particularly that developed in America for practicing managers, has implicitly assumed the opposite: that there is a positive relationship between cohesiveness and productivity. Many techniques, like laboratory training, have been utilized to increase group cohesiveness on the assumption that it will improve the functioning of work groups and operating organizations (6).

There is some basis for this discrepancy between research and application. Some research results indicate that there are conditions under which cohesiveness and productivity are positively related. Schacter *et al.* (5) found that under strong positive induction, cohesiveness and productivity could be positively related. Gross *et al.* (3) found that women's housing units with strong formal leaders tended to be both more productive and more cohesive. Stogdill (8) found a positive correlation between cohesiveness and productivity in the

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² Requests for reprints should be sent to the first-named author, address at the end of this article.

performance of football teams. His analysis indicates that under conditions of high motivation, there can be a positive relationship between cohesiveness and productivity, but cautions that these high motivational conditions can seldom be maintained hour after hour, day after day.

Blake and Mouton (1) propose that strong leadership can create a positive induction in group norms that will sustain both cohesiveness and productivity. They indicate that 9.9, or participative leadership, can create conditions where work group standards are high, group members are committed to group goals, work together to accomplish group goals, and receive individual satisfaction from the accomplishment of the goals.

This research was designed to investigate the relationship between group cohesiveness, and group productivity under routine operating conditions and under strong and weak formal leadership. Two specific hypotheses were tested:

1. Under routine operating conditions, work group cohesiveness and work group productivity are negatively correlated.
2. Strong formal leadership creates a positive induction where work group cohesiveness and work group productivity are positively correlated.

These hypotheses were tested in two separate but identically designed laboratory experiments.

B. METHOD

The subjects for the research were college seniors enrolled in a business policy class at a major midwestern university. As a part of their normal class-work, the students participated in the General Business Management Simulation (4). This simulation was adopted as the experimental task.

The General Business Management Simulation is a total enterprise management game. It can be played by from four to 20 teams called companies, each made up of from four to six participants. The companies compete in a single interactive market; they manufacture and sell a single product which is identified only as a consumer expendable product.

The basic decision period in the simulation is a quarter of a year. Each company makes 14 operating decisions each quarter. The basic market structure of the simulation is predetermined. The actual market, however, is dependent on the actions of the competing companies. It is a function of the basic market and of the effectiveness of the companies in creating a demand for their product. A single company's actual sales are a function of the total actual market and that company's product quality, price, and advertising and selling expenditure, in relation to competing companies' actions in these areas.

A company's profitability is influenced by its sales, reductions in unit costs through methods engineering, minimization of inventory carrying charges, minimization of unit costs of production, and other operating decisions normal to manufacturing firms. Thus, the sales and profitability of an individual firm are a function of the actual market for the product and the relative effectiveness of that company's operating decisions.

A simulation, such as the General Business Management Simulation, provides a quasi-realistic setting for research on work group performance (2). Groups work together over an extended period of time. They have specifically stated goals that they are striving to achieve, and the accomplishment of these goals is dependent on the effective functioning of the group. Involvement, because of the generally interesting nature of the task, is usually high. The group members become differentiated and tend to specialize their actions and their points of view. Conflicts arise between different points of view and the group must develop integrating mechanisms to resolve these conflicts. There are various human and technical skills and abilities available within the group and the group must function effectively to obtain maximum use of these resources. And, of particular importance to this study, there are objective measures of the effectiveness of group functioning.

Two separate industries of competing companies were involved in the study, providing two separate tests of the hypotheses. Industry I consisted of 11 companies. Industry II consisted of 14 companies. Both industries operated simultaneously, but met separately, during the fall quarter, 1970. All research procedures were identical for the two industries.

After the second class meeting of the quarter, the Ss were randomly assigned to General Business Management Simulation companies. One S was randomly selected from each company and appointed president (formal leader) of the company. The president was given total responsibility for work accomplishment and goal attainment for his company. The game coordinator held him responsible for correct completion of necessary forms, for prompt return of the forms, and for the dissemination of necessary information to his group members. In addition, the coordinator communicated to the group only through the president, answered only his questions, communicated procedure to the group through him, and asked him any pertinent questions regarding group operation.

The appointment of a president and the structuring of responsibility and communication were designed to build hierarchy into the groups, to provide a higher degree of realism in the experimental task, and to facilitate that portion of the research regarding the effects of leadership.

At the initial meeting of the companies, Ss were introduced to the simulation and its mechanics. They were told that they were competing with other companies and that accumulated gross profit would be the primary measure of their accomplishment. This was done to reinforce the normal adoption of profit maximization as the primary group goal. At no time was there any mention of the research being conducted on group operations.

All companies completed four simulated years, 16 decisions, during eight weeks of the quarter. Measures of group cohesiveness, strength of formal group leadership, and group productivity were taken at the conclusion of the simulation.

The work group cohesiveness subscale of the Work Group Description Questionnaire (9) was used as a measure of cohesiveness. All members of a company completed the questionnaire and the mean of their responses was used as the measure.

A peer group evaluation was used to determine strength of formal leadership. All members of a company were asked to rank the company members from one to five. A rank of one was given to the company members who had provided the most leadership and contributed the most to group accomplishment. Companies whose presidents were the highest ranked member were classified as strong formal leadership companies. Those in which a member other than the president was the highest ranked member were classified as weak formal leadership companies.

Two measures of group productivity were used. The work group productivity subscale of the Work Group Description Questionnaire was one measure. Since the work group description questionnaire is a paper and pencil questionnaire which solicits respondents' opinions of their groups, productivity, the group productivity subscale response was taken as a measure of *perceived*, rather than actual, productivity.

The measure of actual productivity selected was the accumulated gross profit of the company. The gross profit from each quarter's operation was totaled, giving an accumulated gross profit for the four simulated years. Since each quarter's profit is dependent on the decisions made and actions taken by the company, it reflects directly the effectiveness of work group functioning.

C. RESULTS AND DISCUSSION

As would be expected, there is a significant positive correlation between perceived productivity and actual productivity in both industries, although the correlation is greater in industry I than in industry II ($\rho = .89$, Industry I; $\rho = .48$, Industry II).

There is also a significant positive correlation between cohesiveness and perceived productivity in both industries ($\rho = .46$, Industry I; $\rho = .54$ Industry II). This is inconsistent with Stogdill's findings with the same instruments (9). There is, however, no significant correlation, either positive or negative, between cohesiveness and actual productivity ($\rho = .11$, Industry I; $\rho = .0$, Industry II).

The expectation that there would be, under routine operating conditions, a negative correlation between cohesiveness and productivity is not supported. But, if one uses the measure actual productivity rather than the perceived productivity, the popular assumption of a positive relationship between cohesiveness and productivity is also discredited. The data simply indicate no significant association between cohesiveness and productivity.

The second hypothesis also lacks support. Of the 11 companies in industry I, five were classified as having strong formal leadership. Eight of the 14 companies in industry II had strong formal leadership.

There is, under strong formal leadership conditions, a significant positive correlation between cohesiveness and perceived productivity in both industries ($\rho = .90$, Industry I; $\rho = .60$ Industry II.) but no significant correlation between cohesiveness and actual productivity ($\rho = .60$, Industry I; $\rho = .13$, Industry II). Thus, with the accepting of the actual productivity measure, there was no indication that strong formal leadership created a motivational climate that was conducive to high levels of productivity.

As was expected, there was no significant correlation between cohesiveness and productivity in companies with weak formal leadership. Six of 11 companies in industry I and six of 14 companies in industry II were classified as having weak formal leadership.

There is some indication in the data that members of cohesive companies perceive themselves to be more productive than they actually are. This seems especially true under conditions of strong formal leadership. This perceptual distortion is supported by the lack of a significant positive correlation between perceived and actual productivity in strong formal leadership companies in industry II ($\rho = .21$).

Stogdill (7) has proposed that, if a group concentrates on the interaction and social facilitation necessary for high cohesiveness, they have less time and effort to devote to task-related actions and interactions. If we accept this proposition, it may be that some groups that perceive themselves as highly productive are actually heavily involved in nontask related actions and interactions. They may see themselves as active, involving all group members, working together and receiving satisfaction from their activities, and per-

ceiving their high level of activity to be representative of a high level of productivity. They may, in essence, be productively engaged in creating the satisfying atmosphere which enhances cohesiveness and perceive their high level of involvement and activity to be indicative of a high level of productivity.

The results of this study do not support the popular assumption that high group cohesiveness leads to high group productivity. Likewise, the study does not support the proposition that there is a negative relationship between cohesiveness and productivity. Further, contrary to Blake and Mouton's proposition, strong formal leadership may not produce a positive induction conducive to both high cohesiveness and high productivity.

The results imply that many actions taken to increase work group productivity may actually have no impact on productivity. This research does not support the proposition that actions taken to improve interpersonal relationships and facilitate interpersonal functioning, actions which lead to higher levels of cohesiveness, lead to increases in work group productivity.

D. SUMMARY

Students participating as companies in a management simulation were used to investigate the relationship between group cohesiveness and work group productivity. The *Ss* were randomly assigned to management companies and one *S* from each company was randomly selected and appointed president. The companies competed in the simulation for eight weeks. Measures were taken at the conclusion of the simulation. No significant correlation was found between group cohesiveness and productivity under routine operating conditions. As expected there was a significant positive correlation between group cohesiveness and perceived level of productivity under conditions of strong formal leadership. But, there was no significant correlation between group cohesiveness and actual productivity in either weak or strong formal leadership groups.

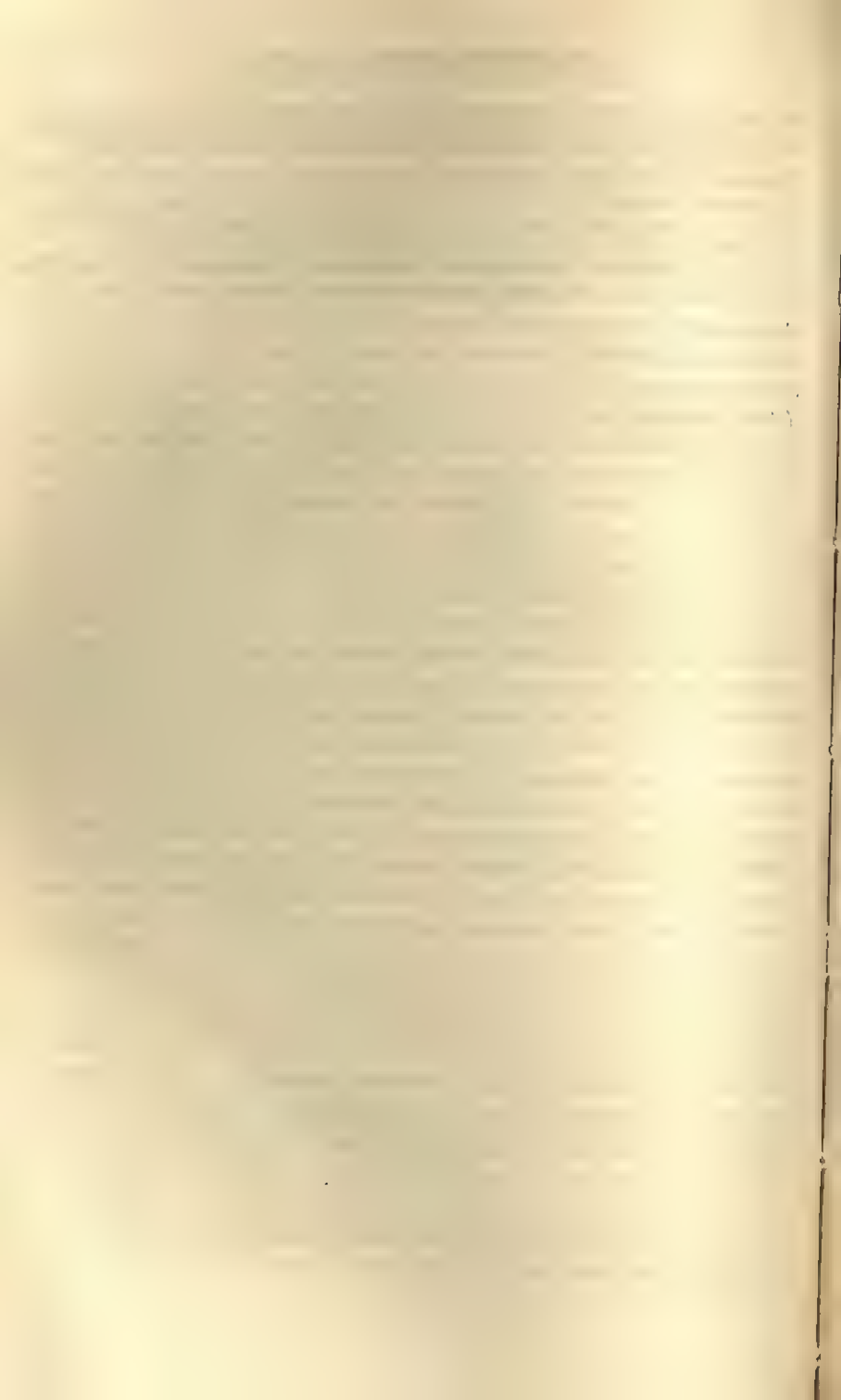
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Department of Organizational Science
Copeland Hall 108B
Ohio University
Athens, Ohio 45701



PREFERENCES AMONG ALTERNATIVE FORMS OF EQUITY: THE APPORTIONMENT OF COALITION REWARD IN THE MALES AND FEMALES*¹

*Graduate School of Business and Public Administration,
Baruch College, The City University of New York*

MAHMOUD A. WAHBA

A. INTRODUCTION

In the last decade, several models have been advanced independently, proposing that people seek justice or equity in the process of social exchange (1, 8, 9). A common feature of these models is that inequity leads to cognitive dissonance, which, in turn, is reduced by a variety of cognitive and/or behavioral means. The most popular model of equity is that of Adams (1). Adams proposed that inequity exists for a person whenever he perceives that the ratio of his outcomes to his inputs and the ratio of the other's outcomes to the other's inputs are unequal. Conversely, equity exists whenever a person perceives that his ratio is equal to that of the others. Much of the research based on Adams' model of equity focused on the effects of wage inequities on job performance. In an employment situation both person A and person B are in an indirect exchange relationship with a third party—the employer—and both A and B compare their ratios. [For a review, see (10, 11).] However, as Adams pointed out, the equity model is applicable to direct exchange relationships as well. One of such relationships is coalition formation. In coalition formation the partners usually divide the coalition reward among themselves after they form a partnership. In the framework of the equity model, the relevant inputs in coalition formation are the initial resources of the partners and the relevant outcomes are the partners' shares of the coalition reward. It could be inferred from Adams' equity model that the coalition reward will be divided proportionally according to the initial resources of the partners. Unless the reward is divided in proportion to the initial resources of the partners, one partner will experience positive inequity and the other will experience negative inequity, and both partners will suffer from cognitive dissonance. To avoid

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dissonance, the partners will attempt to divide the reward proportionally according to the initial resources. Specifically, the following predictions could be advanced:

1. In coalition among equals, the coalition reward will be divided equally.
2. In coalition among unequals, the share of each partner will be proportional to his initial resources where the stronger partner will receive the larger share and *vice versa*.

To test these predictions, four of Caplow's triads (3, 4, 5) were employed in this study. The initial distribution of resources among members in these four triads are presented in Table 1.

TABLE 1
INITIAL DISTRIBUTION OF RESOURCES AMONG MEMBERS IN FOUR TRIADS

Triad type	Initial distribution of resources	Assigned resources			Coalition reward (R)
		A	B	C	
I	$A < B, B = C$	4¢	8¢	8¢	20¢
II	$A > B > C, A = (B + C)$	12¢	8¢	4¢	24¢
III	$A > B, B = C, A < (B + C)$	12¢	8¢	8¢	28¢
IV	$A > B > C, A < (B + C)$	16¢	12¢	8¢	36¢

B. EXPERIMENT I

1. Subjects

Forty-eight male undergraduate students at the University of Nevada served as subjects in 16 triads. A minimum wage of \$1.60 per hour was guaranteed for each student with the possibility of additional earnings according to their behavior in the experiment. The subjects were recruited by advertisement from the campus at large to minimize friendships.

2. Apparatus

A round table and four chairs, three for the triad members and a fourth for the administrator; a standard deck of 52 playing cards; a stopwatch; and a game matrix showing the initial resources in the triad and the coalition reward. Each member was given the following: a pencil, a budget sheet, 60 bargaining sheets (one for each trial), and six identification cards marked A or B or C (two for each letter).

3. Procedure

The procedure was similar to that recommended by Swingle (12). This procedure was chosen over Vinacke's parchesi game and Gamson's simulated

political convention to emphasize the relative importance of the subjects initial resources, and to separate the partnership stage from the reward apportionment stage. The subjects were assigned randomly to triads with the condition that no two members had known each other previously. Four groups were assigned randomly to the four triads in Table 1. There were 60 trials and the subjects were rotated randomly in each trial among positions A, B, or C. Each position was assigned specific initial resources according to the type of triad. It was impossible to discover who was in which position for a given trial before a coalition was formed. Consequently, both personal preferences or preferences due to favorable bargaining were eliminated as criteria for the choice of a partner, and the assigned resources were the only possible criteria. The subjects were instructed to indicate their choice of a partner by the identification cards. The two members who chose each other were considered a coalition and they pooled their resources together to compete against the third member in winning the reward. If there were no mutual choices, the trial was terminated and all members lost their resources. Once a coalition was formed, a card game was played in tricks where the coalition drew 26 cards consecutively, and multiplied the values of the drawn cards by the total resources of the two partners. The third member did the same, using his individual resources. It was possible for either the coalition or the third member to win the game, according to the total number of tricks won. It was obvious that the probability of a coalition success was partially dependent upon the joint resources of the partners and partially on the value of the cards drawn. This procedure assured a more accurate perception by the subjects of the assigned resources because the higher the joint resources of the partners, the higher the probability of coalition success in winning the reward and *vice versa*. If the third member won the game, he was to receive his initial resources. If the coalition won, the partners were asked to divide the coalition reward silently by using the bargaining sheets. The third member was asked to turn his back to the table and was not told how the reward was divided. The bargaining sheets included all possible offers and counter offers for a given reward at the intervals of one cent. A coalition partner was to check his offer in the proper space and to give his bargaining sheet to the administrator, who, in turn would transmit the offer to the other partner and *vice versa*. The negotiation was to be completed in 60 seconds, otherwise the coalition partners lost the reward and the third member would receive his initial resources. The subjects were provided with a budget sheet to record their cumulative gains and losses. The initial resources were recorded in the first column at the beginning of each trial and any gains were recorded in

the second column at the end of the trial, and the difference between the first and the second columns determined the subject's additional earnings. The first three trials were devoted to training to assure the understanding of the procedure. Talking, signaling or communicating by any means was absolutely prohibited. After the experiment was concluded, each subject was paid the minimum hourly rate plus any additional earnings he made.

4. Results

The observed frequencies of reward apportionment were close to one of the following four methods of apportionment:

1. Apportionment based on equality of outcomes regardless of the initial resources.
2. Apportionment based on proportionality of outcomes according to the initial resources.
3. Apportionment based on equality of gains after repayment of initial resources.
4. Apportionment based on the maximization of the gains (or self-interest) of the weak partner on the expense of the strong partner.

There were a total of 240 observations in each of the four triads (4 groups \times 60 triads). The following analysis was performed only on the total number of coalitions formed rather than the total observations because the frequencies of "no coalitions" were excluded.

Table 2 presents the observed frequencies under the four methods of apportionment for each coalition formed (predicted fractions of a cent by the proposed four methods of apportionment were rounded to the closest cent). The observed frequencies were tested for independence from group effect within each triad. A chi-square test applied to a contingency table (4 groups \times 4 classifications of apportionment for each triad) showed no significant effect ($df = 6$).

A chi-square test showed a significant difference between the observed frequencies of apportionment and a theoretical distribution of equal frequencies, both when self-interest classification was included ($df = 3$, $p < .001$) and when it was excluded ($df = 2$, $p < .001$). In the case of coalitions among equals, the first three methods of apportionment yielded equal outcomes for both partners. Consequently, it was not possible to test for the preferences among equals. The results, however, could be interpreted as supporting Adams' predictions in coalitions among equals but not in coalitions among unequals. In coalitions among equals, such as coalition BC in triad $A < B$, $B = C$, the reward was divided equally. On the other hand, in coalitions

TABLE 2
FREQUENCY OF REWARD APPORTIONMENT IN THE MALE TRIADS

Triad type	Coalition formed	Equal	Methods of apportionment Proportional	Equal gains	Self-interest	χ^2	Dis-agree
I. ($R = 20\%$) $A < B$ $B = C$	AB	9	0	20	1	34.2*	4
	AC	6	0	34	1	19.3*	4
	BC	105			0		0
II. ($R = 24\%$) $A > B > C$ $A = (B + C)$	AB	41	7	66	2	21.1*	5
	AC	9	1	43	0	21.3*	1
	BC	8	0	19	0	34.7*	5
III. ($R = 28\%$) $A > B$ $B = C$ $A (B + C)$	AB	16	7	64	3	26.7*	2
	AC	14	10	45	2	24.6*	2
	BC	18			0		7
IV. ($R = 36\%$) $A > B > C$ $A < (B + C)$	AB	47	4	81	3	31.2*	11
	AC	13	4	31	0	20.2*	5
	BC	2	3	5	0	5.2	1

* $p < .001$, $df = 3$.

among unequals, such as coalition AB in the triad $A > B$, $B = C$, $A < (B + C)$, the reward was not divided proportionally according to the initial resources; rather coalition gains were divided equally after repayment of the initial resources. Apportionment that reflected the self-interest of the weak member was the least frequent, especially in coalitions among equals. Such method of apportionment could be the result of the bargaining skills of the weak partner and his desire to maximize his personal gains, thus promoting his self-interest. The low frequencies under self-interest classification, however, showed that the equity norms had a stronger effect in the apportionment of reward than self-interest. Alternatively, the maximization of the differences between self and other was not as important as the minimization of that difference. The frequencies of disagreement were generally lower in coalitions among equals than coalitions among unequals. This suggested that norms of equity were more acceptable to partners in coalitions among equals than in coalitions among unequals. The trends in coalitions among equals were the same whether coalitions were formed between the two weak members in the triad, such as the case in coalitions BC in triad $A > B$, $B = C$, $A < (B + C)$ or between the two strong members, such as the case in coalition BC in triad $A < B$, $B = C$. Also, the trends in coalitions among unequals were the same regardless of the magnitude of the difference between the initial resources.

C. EXPERIMENT II

The second experiment was an exact replication of the first except for the subjects. The subjects in the second experiment were 48 female undergraduate students at the University of Nevada recruited by the same method as the males.

A chi-square test for coalitions formed showed a significant difference between the observed frequencies and a distribution of equal frequencies both when self-interest classification was included (χ^2 , $df = 3$, $p < .001$, or $p < .01$) and when it was excluded (χ^2 , $df = 2$, $p < .001$, or $p < .01$).

The results in the females could also be interpreted as supporting Adams' predictions in coalitions among equals, but not in coalitions among unequals. In coalitions among equals, coalition reward was divided equally. In coalitions among unequals, the females also divided the reward equally regardless of the initial resources. However, there were higher frequencies of disagreement among females than among males. This suggested that unconditional equality was not easily acceptable by all the females. The frequencies under the self-interest classification were lower in the females than in the males.

D. EXPERIMENT III

The findings of the first experiment were rather interesting. It uncovered an alternative form of equity different from those proposed by various equity models, especially that of Adams: namely, that the most preferred form of equity for the males was equality of gains after repayment of inputs.

Another experiment was designed to cross-validate the findings under different experimental conditions.

It could be noted that the procedure used in the first two experiments dealt with probabilistic rather than deterministic coalition formations (6, 7, 15). In deterministic coalition formation, the probability that a coalition will succeed in winning a reward is either one or zero: e.g., a coalition is either a sure winner or a sure loser. In probabilistic coalition formation the probability of coalition success is between one and zero, and a coalition is not a sure winner. In Experiments I and II, the probability of coalition success was dependent upon coalition strength, and any coalition could have either succeeded or failed in winning the assigned reward.

Experiment III, on the other hand, dealt with deterministic coalition formations where any coalition was a sure-winning coalition. The subjects were 48 male undergraduate students at the University of Nevada recruited by the same method as that of the first two experiments. The procedure was also the same except for the elimination of the card game. After a coalition was formed, it was considered a winner and the partners proceeded directly to negotiate the apportionment of the reward. A chi-square test was applied to the observed frequencies of the coalitions formed. The test showed significant differences among alternative forms of equity, both when self-interest classification was included (χ^2 , $df = 3$, $p < .001$) and when it was excluded (χ^2 , $df = 2$, $p < .001$). The results were similar to those of the first experiment. In coalitions among equals, the reward was divided equally. In coalition among unequals, the coalition gain was divided equally after repayment of the initial resources. The results showed that the latter form of equity is relevant both in probabilistic and deterministic coalition formation. This, in turn, enhances the predictive validity of the proposed form of equity.

E. DISCUSSION

It is evident from the results that equity could take one of three forms. The first, is equality of outcomes regardless of inputs, or outcome A = outcome B. The second, is proportionality of outcomes according to inputs, or outcome A/input A = outcome B/input B. The third is equality of gains

after repayment of inputs, or outcome $A = \text{input } A + (\text{Reward} - \text{input } AB/n)$ and outcome $B = \text{input } A + (\text{Reward} - \text{input } AB/n)$. It is also evident that the equity model could be extended to predict the reward apportionment in both deterministic and probabilistic coalition formations. In coalitions among equals both the males and the females in this study preferred equality of outcomes. However, in coalitions among unequals, the behavior of the females and the males was significantly different. In the females, coalition reward was also divided equally regardless of the inputs. In the males, the reward was not divided in proportion to the inputs as Adams suggested, rather, the gains were divided equally after repayment of the inputs. The behavior of the males was the same both under probabilistic and deterministic coalition formations. These results imply that what was considered equitable for the males was not necessarily equitable for the females and *vice versa*. The males preferred differential outcomes according to the inputs, while the females preferred nondifferential outcomes regardless of the inputs. The differences in the behavior of the males and the females could be attributed to what Vinacke and associates (2, 13, 14) described as the typical "feminine" and "masculine" strategies. The females may use an anticompetitive strategy because they behave along the lines of least resistance in order to minimize conflict. The males may use a competitive strategy in an attempt to maximize their personal gains.

The preference of the males for equality of gains after repayment inputs over proportionality of outcomes according to inputs has a significant implication for future studies in equity. The former forms of equity received little or no attention previously. Its stability in both deterministic and probabilistic coalition formations indicates that it may have a high predictive validity in other social exchange situations as well. Future studies in wage inequities should be designed carefully to permit the determination of whether employees actually prefer proportionality of outcomes according to inputs or equality of gains after repayment of inputs.

F. SUMMARY

The coalition formation paradigm was used to test for the preferences among alternative forms of equity by the males and the females. The first form of equity was equality of outcomes regardless of inputs, the second was proportionality of outcomes according to inputs, and the third was equality of gains after repayment of inputs. The females preferred equality of outcomes in both coalitions among equals and coalitions among unequals. The males preferred equality of gains after repayment of inputs in both deterministic and

probabilistic coalition formations. The implications of the findings in three experiments were discussed with regard to both coalition formations and the equity model.

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Baruch Graduate Center

257 Park Ave. South

New York, New York 10010



ATTITUDE CHANGE AS A FUNCTION OF PERCEIVED AROUSAL*

Department of Psychology, The University of Toledo

IRWIN A. HOROWITZ

A. INTRODUCTION

Recently efforts have been made to reconcile findings of both positive (4) and negative (7) relationships between fear arousal and attitude change. Several authors have attempted to account for these differences by positing the existence of an inverted U-shaped relationship between these two factors (1, 6, 9).

While many researchers have offered the inverted U-shaped hypothesis as a *post hoc* explanation for obtained results, direct empirical support for a nonmonotonic relationship between fear arousal and attitude change is equivocal. Janis (5) has attempted to fit data from various studies to the inverted U-shaped function with some success. The difficulty, however, lies in the fact that fear levels employed in various studies are not always comparable. What has been designated as a high fear appeal in one study may in fact correspond to a mild or low fear appeal in another study (1, 8).

The suggestion that an inverted U-shaped curve best represents the relationship between fear arousal and attitude change implies, obviously, that there is a point of maximal arousal yielding the greatest amount of attitude change. Several factors have been suggested as affecting the determination of point of optimal arousal. Higbee (1), for example, suggests that the probability of the undesirable consequence occurring is the crucial variable. Janis (5) has postulated that the exact shape of the inverted U-shaped curve is affected by a variety of context, situational, and dispositional variables. The above writers suggest, then, that the relationship between fear arousal and attitude change is not a generalized notion, but susceptible to modification by such factors as personality and situational variables.

Horowitz and Gumenik (3) have reported that the relationship between attitude change and fear arousal is affected by a subject variable, whether or not a *S* is a volunteer, and a situational variable, whether or not the *S* perceives he has a choice as to whether or not he participates in the experiment.

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Nonvolunteers allowed choice and volunteers exhibited greater acceptance of the recommendations of the high fear appeal than the low fear appeal. The reverse occurred, for nonvolunteers allowed no choice. This study, however, involved only two values, labeled low and high, on the fear arousal continuum. If several values of the fear arousal continuum could be engaged, then, it would be possible to identify the different points of optimal arousal for volunteers and nonvolunteers.

The present study is an attempt to ascertain whether the relationship between perceived fear arousal and attitude change is best represented by an inverted U-shaped function. A subsidiary purpose is to determine whether volunteer Ss exhibit a higher optimal level of arousal than do nonvolunteer Ss. Volunteers are more arousal-seeking than nonvolunteers (10) and respond with less reactance to an increase in fear arousal than do nonvolunteers (2).

Janis and Leventhal (6) have indicated that, in order to demonstrate the existence of an inverted U-shaped relationship, more than two levels on the fear arousal continuum must be manipulated and one must be able to assess the effectiveness of the arousal level with respect to the fixed points in the continuum. In the present study five levels of arousal were manipulated. Rather than evoking different levels of arousal by manipulating message content, the present study utilizes a modification of a technique employed by Valins (12). Employment of this technique permits arousal levels to be manipulated independently of the persuasive message content. Valins demonstrated that bogus, nonveridical heart-rate feedback affects the labeling of emotional stimuli. Valins (12) suggests that nonveridical representations of physiological occurrences have the same effect on behavior as do veridical ones.

B. METHOD

1. Subjects

The Ss were 120 male students enrolled in the basic psychology course at the University of Toledo.

Several weeks prior to the experiment a request was made for volunteers for "an interesting psychological experiment." The students were told that the present method of S procurement was being re-evaluated and it was necessary to know how many people would volunteer for an experiment if it were not a course requirement. It was emphasized that students would not receive any credit for participation. They would be *gratis* volunteers.

A sign-up sheet was then distributed and students were asked to indicate whether or not they would be willing to volunteer for the experiment. Both

volunteers and nonvolunteers were therefore identified by means of this sign-up sheet. The volunteers were also requested to indicate the hours during which they would be available. The experiment was described as a very interesting and informative psychological experiment. No further information was given.

Shortly after the identification of the volunteer and nonvolunteer population, these students were informed that because of technical difficulties the experiment had to be postponed and the volunteers would not be needed.

2. Design and Procedure

Sixty American male volunteers and 60 American male nonvolunteers, as determined by their previously expressed preference, were recruited for the experiment in the same manner. Therefore, identification of the samples and recruitment were accomplished independently. One week following the identification of the samples recruitment began. Ss were given a standard subject card requiring that they appear at the laboratory at the appointed time for a psychological experiment to fulfill a course requirement. The experimenter in the laboratory was not the same individual whom the subjects encountered in the classroom.

Upon arrival in the laboratory the Ss were randomly assigned to one of five levels of arousal. The male E did not know whether the S had been identified as a volunteer or nonvolunteer. Volunteering and fear arousal were therefore combined in a 2×5 factorial design.

3. Arousal Level Manipulation

Level of Arousal (LOA) was manipulated by a combination of false heart-rate feedback and false GSR feedback.

4. Recordings

A technique employed by Valins (12) was utilized to produce the false heart-rate recordings. These tapes were made by recording square wave pulses produced by a Hewlett-Packard low-frequency signal generator, a signal tracer utilized as a capacitance network, and a speaker.

A pilot study revealed that Ss were capable of accurately perceiving the number of heartbeats per minute that were employed in the feedback procedure. The pilot study also suggested that since the films utilized as communication materials had at least moderate arousal properties any heart-rate feedback below 60 beats per minute (BPM) vitiated the credibility of the procedure. Therefore, LOA₁, ranged from 60 to 68 BPM. Levels 2 through

5 respectively were 76-80 BPM; 88-94 BPM; 104-110 BPM; 118-126 BPM.

5. *GSR Feedback*

The false GSR recordings were made by a Beckman type RB dynograph. The recordings were manipulated so that five discernible deflection levels were observable. These five graphs were used in correspondence with the five levels of false heartbeat feedback.

6. *Instructions*

On arrival *S* was seated in a chair with his back to the Beckman Dynograph. All *Ss* were given the following instructions.

This experiment is concerned with determining the effectiveness of various arguments concerning the use of drugs. Materials both in pamphlet form and on film have been produced on this topic. We are concerned with how effective they are in getting the message across. We are also concerned with how these messages affect you physiologically. We want you to be as candid and honest as you can in the evaluations we will ask you to make.

After much effort we have found that the best way to find out how people react to these messages is to take measures of their physiological reactions. People cannot mask or hide these responses and we therefore get a better idea of what is going on. We have found that the two best techniques are a person's heartbeat rate and his skin resistance. The machine behind you has the capability of measuring change in skin resistance and, as you can see, has a cardiometer which measures your heartbeat.

We are going to allow you to listen to your own heartbeat and to observe on a graph the GSR readings, a measure of emotional arousal.

We have found that these are about five fairly distinct levels of reactions. The GSR and the heartbeat rate correspond pretty well with each other.

Put these headphones on, I'll give you an example of what I mean.

7. *Presentation of Recording*

The *S* heard six prerecorded levels of arousal (LOA). The initial LOA on the tape was not utilized in the subsequent experimental manipulation of arousal. Following the initial LOA, used essentially as a basis for judgment, the five LOAs employed in the experiment were prevented. Each level was recorded for a duration of two minutes with a 30-second break between LOAs. The LOAs were verbally designated on the tape prior to onset.

As each level was presented on the tape recording the *S* was shown a GSR graph purported to be indicative of the same LOA.

After the initial presentation of the five levels, a second series was presented on a tape beginning with LOA₃, proceeding through levels 1, 4, 2, and 5. *S* was asked to identify each level and to point out the corresponding GSR.

8. *Fear Arousal Manipulation and Communication Materials*

After the *E* was certain that all had been done to enable *S* to discern the five LOAs, a small microphone was placed over his heart and finger electrodes were taped to the third finger of his right hand. The wire leading from the headphones was attached to a hidden tape recorder.

The experimental materials were two pamphlets and one film, all pertaining to the effects of drug misuse. The topics covered in the written messages were the dangers of amphetamines and barbiturates and the consequences of taking hallucinogenic drugs. The materials emphasized case histories and vivid descriptions. The information was supplied by materials published by HEW.

The film was entitled "Bennies and Goof Balls" and was based on interviews with victims of pep-pill abuse. The film illustrates the dangerous psychological and physiological effects of pill-popping. The film is a product of the United States Public Health Service.

The above materials have previously been employed in two studies and were used to induce "high" fear arousal (2, 3).

9. *False Feedback*

At three different points in the film the *S* received the appropriate false heart-rate and GSR feedback. The timing of the feedback coincided with emotionally arousing points in the film. The *E* surreptitiously started the second tape recorder at the appropriate times and the *S* received false heart-rate feedback for 45 seconds on three separate occasions. The GSR dial was visible to the *S* and the reaction to the stimuli, ranging from a low to a high reactor, comprising the five levels of arousal, was appropriately manipulated to coincide with the false heart-rate feedback.

10. *Dependent Measure*

Each communication pamphlet proposed three recommendations for the elimination of drug misuse. *Ss* agreement scores were obtained by having them respond to three 10-point scales indicating the extent of agreement with

the recommendations. *S*'s agreement score was arrived at by averaging his responses to these items.

11. *Postexperimental Questionnaire*

Two measures were employed to check on the effectiveness of the LOA manipulation. The first asked the *S* to respond, on a 10-point scale ranging from almost no reaction to strong reaction, to the following item: "According to the physiological measures used in this study, what would you say was your reaction to the stimuli?" (perception of bogus feedback).

On a similar 10-point scale the *S* was asked to respond to a second item which related to how the *S* perceived his own internal state: "If you did not have these physiological measures to rely on, how would you have described your own internal degree of arousal?" (perceived internal state).

C. RESULTS AND DISCUSSION

1. *Adequacy of the Experimental Manipulations*

An analysis of variance performed on the first item of the postexperimental questionnaire revealed that *S*s accurately perceived the differentially manipulated levels of arousal ($F = 41.39$, $df = 4/110$, $p < .01$). Volunteers did not, however, perceive the manipulations as eliciting greater arousal than did nonvolunteers ($F = 2.61$, $df = 1/110$, $p > .05$). The interaction between LOA and the volunteering dimension was not significant.

That *S*s were able to report accurately what *E* had trained them to report is not surprising. A more critical test of the adequacy of the LOA manipulation is the *S*'s perception of his own internal state of arousal. Volunteers, in this instance reported a higher degree of perceived internal arousal than did nonvolunteers ($F = 16.96$, $df = 1/110$, $p < .01$). LOA also significantly affected perceived internal arousal state ($F = 19.01$, $df = 4/110$, $p < .01$). The interaction was not significant ($F < 1$).

2. *Effect of Levels of Arousal on Agreement Scores*

The results of an analysis of variance performed on *S*'s agreement scores revealed a significant volunteer, nonvolunteer main effect ($F = 12.49$, $df = 1/110$, $p < .01$) and a significant LOA main effect ($F = 4.76$, $df = 4/110$, $p < .01$). The interaction failed to reach significance ($F = 1.85$, $df = 4/110$, $p > .05$).

Inspection of Figure 1 indicates that for volunteer *S*s agreement scores increased as a function of an increase in arousal level. The linear component

of this curve yields significance ($F = 18.11$, $df = 1/55$, $p < .01$), with the use of orthogonal polynomial coefficients.

The profile of the nonvolunteer curve in Figure 1 tends toward an inverted

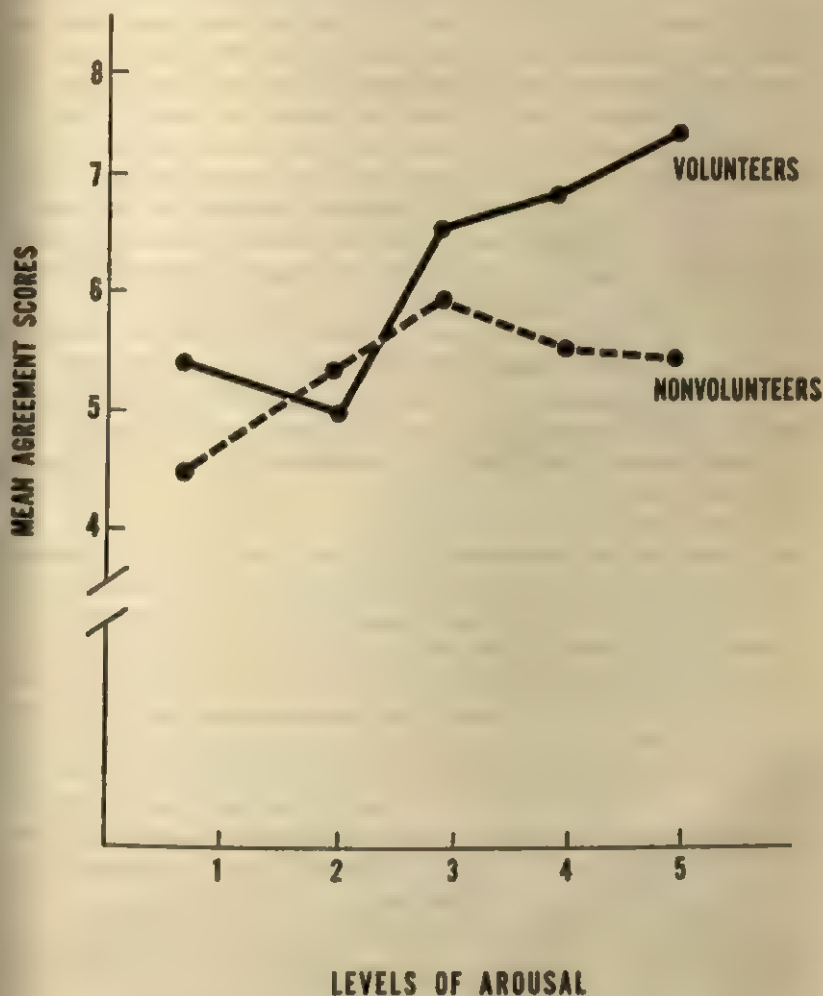


FIGURE 1
MEAN AGREEMENT SCORES AS A FUNCTION OF LEVELS OF AROUSAL FOR
VOLUNTEER AND NONVOLUNTEER SUBJECTS

U-shaped form. While the linear component of the curve failed to reach significance ($F = 3.36$, $df = 1/55$, $p > .10$), the quadratic component was significant at $p < .05$ ($F = 4.04$, $df = 1/55$).

With regard to the nonvolunteer Ss in this experiment, as Figure 1 suggests, the inverted U-hypothesis is tenable. While the present experiment was not designed to delineate factors responsible for the differences between the profiles of the volunteer and nonvolunteer curves, previous research has indicated that volunteers are less likely to respond to increases in arousal levels by rejecting the recommendations of the experimental communications. Conversely, increments in arousal levels elicit greater psychological reactance in nonvolunteers (3). Volunteers, as Rosenthal and Rosnow (10) report, may be more arousal seeking than nonvolunteers and thus respond positively to increments in arousal and/or they may, as previously indicated, respond differently to the arousal manipulations than to nonvolunteers.

As Figure 1 indicates the inverted U-hypothesis holds only for nonvolunteers. The positive effect of the LOAs on agreement scores of volunteers was observed both in the present study and in the preceding pilot experiment. Clearly the optimal arousal level for volunteer Ss peaks higher on the acceptance curve than the optimal LOA for nonvolunteer Ss, which occurs at an intermediate point.

The volunteer-nonvolunteer differences may be due, of course, to initial population differences rather than the experimental manipulations. Volunteers may simply be more readily persuaded by the false feedback technique and their responses to the persuasive messages generally seem to parallel their responses to the arousal manipulation. Volunteers, for example, reported a higher degree of perceived arousal than did nonvolunteers. Volunteers, thus persuaded of the authoritativeness of the physiological feedback and perhaps unsure of the meaning of the arousal, may attribute the effect of persuasiveness of the messages. Nonvolunteers, less susceptible to the experimental demands, unwilling to be "faithful" to some of the more crude experimental manipulations, particularly the initial recordings of false heart-rate feedback, may level off their attitude scores at the higher levels of arousal, thus producing perhaps a spurious curvilinear relationship.

It should be noted that the present study does not deal directly with the relationship between fear arousal and attitude change. Clearly the study has been concerned with *perceived* arousal and there is no evidence that high levels of arousal in fact did produce greater fear. Valins has reported that his false feedback technique did not lead to corresponding physiological changes (13).

Nevertheless, cognitions about one's internal reactions are important determinants of behavior as Schacter and Singer (11) have demonstrated.

D. SUMMARY

The study was an attempt to ascertain whether the relationship between perceived fear arousal and attitude change is best represented by an inverted U-shaped curve. A subsidiary purpose was to determine optimal levels of arousal for two subject populations, volunteers and nonvolunteers. Employing both false heart-rate and GSR feedback, five arousal levels were manipulated independently of message content which was constant for all conditions. Sixty American male undergraduate male volunteers and 60 male nonvolunteers were randomly assigned to the five arousal level conditions, combining in a 2×5 factorial design. An analysis of variance revealed that volunteers yielded significantly higher agreement scores than nonvolunteers and the level of arousal main effect also yielded statistical significance. The relationship between arousal and agreement scores was essentially positive and linear for volunteers, while the profile of the nonvolunteer curve exhibited an inverted U-shaped form with a quadratic component significant at $p < .05$.

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Department of Psychology
College of Arts and Sciences
The University of Toledo
Toledo, Ohio 41606

MULTIDIMENSIONAL JUDGMENT SCALING OF WELL-KNOWN POLITICAL FIGURES*¹

*Laboratory of Clinical-Social Psychophysics and Scaling,
The University of North Dakota*

LEROY A. STONE AND GARY J. COLES

A. INTRODUCTION

Well over three decades ago the first multidimensional scaling models were formally presented (9, 14). Although a number of such models have been proposed in the intervening years, they were rather prohibitive from a computational viewpoint. The advent and widespread availability of high speed electronic computers, however, has solved this computational bottleneck and, as a result, there has been reported an ever increasing number of investigations that have been concerned with multidimensional psychological scaling measurement. What is rather surprising is the paucity of applied research employing multidimensional judgment scaling techniques. That none of these methodologies have been extended into the realm of applied psychology is probably due to the fact that almost all of the initial applications and discussions of multidimensional judgment scaling have been limited to rather contrived demonstrations which have employed somewhat "uninteresting" and sterile laboratory-type stimuli (e.g., randomly determined two dimensional shapes, geometric figures, alphabetic characters, hues, etc.). Notable exceptions have been a series of most interesting investigations, recently conducted in Sweden (cf. 1, 6, 7).

The use of these methods is appealing because "Multidimensional scaling [may be] used in two related types of studies. In one type of study the investigator does not know what dimensions people typically use in responding to a class of stimuli and the purpose of such investigations is to learn the dimensions. In the second type of study . . . the investigator is rather sure what the major dimensions of preference or judgment are, but he is not sure how people use these dimensions" (8, p. 404). Both of these utilizations could be made by the applied psychologist.

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Just recently the present investigators (10, 11, 13) have described an important new modification² to an older content-vector multidimensional similarity model proposed by Ekman (*cf.* 3, 4). This model assumes that estimated similarity is a function of the degree to which two percepts possess the same common psychological content. The model is termed a content-vector model because it represents percepts as vectors in psychological space. The dimensions of this psychological space, then, are those that most parsimoniously and orthogonally account for the interrelationships among the percept vectors. In other words, similarity estimation gives some idea of the relationship among percepts with respect to each other, while the extracted dimensions express these same interrelationships among percepts with reference to the same reference axes (assumed to be psychological dimensions).

The Stone-Coles modification, although far-reaching in consequence, is quite simple. Judgmental data (similarity estimates) are secured in the same manner as stipulated by Ekman (3). We propose that resulting similarity matrices (which Ekman factor analyzes) should best be considered only as averaged raw data (across k judges) and that product-moment correlations between stimuli be computed. For the purpose of calculating these "correlational similarities," a $m \times m$ (where m = number of stimuli) mean similarity matrix with unities in the main diagonal is treated as a set of m column vectors, each vector being composed of m row elements. Column vectors are then intercorrelated. If there are m column vectors to be intercorrelated, $[m(m-1)]/2$ correlations will result. These correlations, when arranged in matrix form, become a correlational similarity matrix.

Such a correlational measure of similarity incorporates *all* of the judgmental information possessed and may range from -1.00 to 1.00 . With correlational similarity an r of 1.00 indicates perceived identity, 0.00 indicates no systematic similarity (dissimilarity), and -1.00 indicates maximum and systematic dissimilarity. In other words, an r of -1.00 can be interpreted as descriptive of perceived opposites.

The correlational similarity matrix is then factor analyzed and the resulting factors are rotated (if necessary) so that they can be more clearly viewed and understood. The factors may be interpreted as similarity judgment-dimensions. It should be noted that such factor-dimensions can differ from those obtained with the use of Ekman's method with respect to one very major characteristic.

² Until the supply is exhausted, the monograph by Stone, Coles, and Lindem (11) is available without charge from its first author. It is also available from ASIS as Document NAPS-01089. Write to ASIS National Auxiliary Publications Service, c/o CCM Information Corp., 909 Third Ave., 21st Floor, New York, N. Y. 10022. Remit \$2.00 for microfiche or \$3.00 for photocopy.

Ekman's similarity matrix representation is composed of averaged similarity estimations, which by necessity, will all be positive. As a consequence, all stimuli load positively (especially after rotation) on the extracted judgmental factors. On the other hand, since correlational similarities may also be negative, a factor analysis of a correlational similarity matrix *may* reveal bipolar judgment factors.³ This fact will, in the latter portion of this report, be shown to be of considerable importance in addition to having explanatory value.

The purpose of the present investigation was to apply the new Stone-Coles method to the multidimensional scaling of a class of stimuli in which most Americans express a great "interest," nationally known political figures. Of particular interest to the present investigators was the extraction of the dimensions actually used by individuals in mediating similarity (Nunnally's first use for multidimensional scaling).

B. METHOD

The stimuli consisted of the names of 15 nationally known politicians: 1. Maddox, 2. N. Rockefeller, 3. Agnew, 4. Percy, 5. McGovern, 6. Fulbright, 7. Humphrey, 8. Wallace, 9. Muskie, 10. LBJ, 11. Reagan, 12. Lindsay, 13. Brooks, 14. Nixon, and 15. E. Kennedy. (The numerical order for these names was randomly determined). These particular names were purposely chosen so as to represent a broad spectrum of political philosophies and postures.

The judges (*J*s) were six Ph.D. academically employed psychologists. They, like the stimuli, were also selected for maximum heterogeneity with respect to political philosophies. One *J* (judge A) is described by some of his colleagues as "so conservative that he is almost a monarchist." At the other end of this political-belief spectrum was a *J* (judge C) visibly connected with the "new-left revolutionary movement." In between these two extremes were an "under-30" liberal (judge B), an "over-40" liberal (judge D) who is noted for some of his rather selected conservative viewpoints, a self-proclaimed eclectic (seemingly not affiliated with any single political party or systematic viewpoint) independent (judge E), and a young (age 30) Republican who might accurately be labeled as a moderate-conservative (judge F).

The timing for obtaining similarity judgments about politician-stimuli was most fortuitous. All judgments were secured within a couple of days following the news release pertaining to the recent (May, 1970) American military

³ We have found that bipolar representation is only shown when such a representation is justified by the judgmental data. The model does *not* force the percepts to be cast into unjustifiable (meaningless) bipolar form. A report of instances when bipolarity of judgment factors was not found is now being prepared.

entry into Cambodia. In fact, the investigators are aware that two of the *J*s made their judgments the day after the Kent State University student shootings. In other words, the judgments were indeed secured at a time of rather unusual political unrest and polarization.

Each *J* made 105 single similarity estimations on a "percentage" identity scale which could range from 0 to 100 (one estimation for each pair comparison presentation of the stimuli).

The exact instructions were

This study represents an attempt to perform a similarity analysis of 15 well-known politicians. Enclosed is a deck of computer cards on each of which is printed one of the 105 possible pairs of the politician names. Would you please estimate the *degree* of overall similarity which you feel exists between each pair of politicians named. Use a numbering scheme where 0 (zero) denotes *no* similarity at all and 100 denotes identity. Please attempt to base your estimate on your immediate impression of similarity; that is, estimate the degree of similarity as it first comes to mind. In other words, you are to use numbers between 0 and 100 to rate the percent of immediately perceived similarity.

For example, let us estimate the degree of similarity in meaning of the two word pairs, *happy-content* and *happy-sad*. Since the degree of similarity between *happy* and *content* is quite high, you would undoubtedly estimate the degree of immediately perceived similarity to the correspondingly high (with perhaps an 85). On the other hand, *happy* and *sad* are quite dissimilar (that is their degree of similarity is low) and you might estimate their degree of overall similarity to be perhaps 7. In like manner, you are to estimate the similarity as immediately perceived between all paired politicians presented on the deck of computer cards.

Would you write your estimate in the lower left-hand corner of each card in approximately the area of each card as that indicated by the circle on the first card in your deck. You may use either pen or pencil. Also, please write your name in the lower left-hand corner of the first card in your deck.

Lastly, please do not discuss the task with others who have not yet completed the task as we wish each of the subject's ratings to be as independent of the others as possible.

Thank you for your assistance.

C. RESULTS

So as to discover if there was more than one single judgmental frame of reference, an inverse factor analysis (principal components) was performed. The interjudge correlation matrix (6×6) which was factored comprised correlations computed between the sets of 105 numerical estimations which each *J* produced. One rather sizable *J* factor emerged which accounted for

almost 70 percent of the interjudge variance. Loadings on the J factor were all rather uniformly high as they ranged from .73 to .93. It is most interesting to note that the J s sharing very different political philosophies-views had very similar loadings (correlations with the factor) on this J factor. Such a result could be interpreted to mean that possessing radically different viewpoints regarding the stimuli may not (at least in this investigative instance) affect the similarity evaluations of paired stimuli.

For each J , a 15×15 similarity estimation matrix was constructed which was composed of his numerical estimations. Since this matrix must be symmetrical and since only $[m(m-1)]/2$ estimations were secured from each judge, the s_{ij} estimations were also used for the s_{ji} entries in this matrix. A "group" similarity matrix was also constructed on the basis of averaged (geometric mean across the six J s) similarity estimations (see Table 1).⁴ In all of these similarity matrices, unity values were inserted in the major diagonals. From each of these similarity matrices (six individual J matrices and one "averaged" or "group" matrix) a Stone-Coles correlational similarity matrix was computed. The "group" correlation similarity matrix is shown in Table 2.⁵

Each of these seven correlational similarity matrices was factor analyzed with the use of a principal components solution (where the limiting eigenvalue was set at 1.00) and was rotated to a varimax criterion (5). For the individual J s the number of extracted factors ranged from two (for judges B, D, and E) to four (judge F). For the J s who had more than two judgmental factors the third and fourth factors were all uniformly small (each accounted for not more than eight percent of the variance) and were therefore ignored. In addition, each of these smaller factors was not readily interpretable. Thus, it could be inferred that they were "hash" factors which could be attributable to "noise" or error in the system.

The principal components analysis of the "group" correlational similarity matrix (Table 2) resulted in two factor dimensions. These two dimensions seemed to lend themselves readily to labeling or naming. The first factor looked like a "position on USA military activity" or "war posture" factor (see

⁴ Recently, a reliability estimation approach, based on analysis of variance thinking, has been developed for estimating the reliability of such a geometric mean similarity matrix (2). The estimated reliability (corrected for "frame of reference") for this particular similarity matrix (Table 1) is statistically significant ($r = .92$, $df = 103$, $t = 21.90$, $p < .0001$).

⁵ A paradigm for estimating the reliability for a correlational similarity matrix has also been recently offered (11, 12) and is based on an innovation of the "split-half" scheme. For this particular correlational similarity matrix (Table 2) the estimated reliability (corrected for "length") is statistically significant ($r = .96$, $df = 103$, $t = 33.92$, $p < .0001$).

TABLE 1
GEOMETRIC MEAN SIMILARITY ESTIMATION MATRIX

Stimuli	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Maddox	100														
2. Rockefeller		19	66	20	08	24	12	73	14	28	75	10	09	38	08
3. Agnew		100	33	67	53	51	63	19	69	48	35	53	62	51	54
4. Percy			100	24	15	19	21	56	20	45	75	22	21	70	17
5. McGovern				100	64	47	63	15	71	51	23	74	69	39	61
6. Fulbright					100	60	61	06	66	36	10	75	74	21	69
7. Humphrey						100	58	16	56	38	28	58	44	31	58
8. Wallace							100	23	71	62	18	61	70	34	66
9. Muskie								100	17	29	56	14	18	45	13
10. LBJ									100	50	23	72	75	30	75
11. Reagan										100	36	48	56	47	44
12. Lindsay											100	16	17	70	15
13. Brooks												100	73	35	78
14. Nixon													100	42	72
15. Kennedy														100	26
															100

Note: Decimals omitted.

TABLE 2
 THE "GROUP" CORRELATIONAL SIMILARITY MATRIX

Stimuli	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Maddox	100	-77	83	-85	-90	-70	-90	91	-90	-42	89	-92	-94	42	-92
2. Rockefeller		100	-60	78	63	51	73	-76	78	34	-58	63	72	-18	64
3. Agnew			100	-78	-89	-78	-84	76	-87	-17	92	-85	-82	78	-88
4. Percy				100	83	55	80	-86	88	36	-81	88	87	-46	82
5. McGovern					100	74	80	-90	87	17	-91	93	90	-66	91
6. Fulbright						100	67	-77	67	07	-69	69	54	-57	71
7. Humphrey							100	-80	88	51	-87	80	87	-54	85
8. Wallace								100	-87	-38	78	-89	-85	44	-87
9. Muskie									100	33	-86	90	91	-59	93
10. LBj										100	-31	28	41	01	26
11. Reagan											100	-89	-88	74	-90
12. Lindsay												100	90	-56	94
13. Brooks													100	-47	90
14. Nixon														100	-64
15. Kennedy															100

Note: Decimals omitted.

Table 3) in that those particular politicians who are heavily associated with opposing points of view on this kind of issue had high loadings on this bipolar factor. The second factor looked like a "race" or "civil-rights" factor (see Table 4) in that those politicians, who are clearly associated on opposing poles of this particular kind of domestic issue, had the type of loadings (direction and magnitude), on this extracted bipolar factor, which would be consistent with such an interpretation. The amount of judgmental variance accounted for by these two "group" judgmental factors was high, 85 percent. The two factors resembled very closely the first two factors extracted for each individual *J* (see Tables 3 and 4).

For half of the *J*s (C, D, and E) the "race" factor was their first (and largest) factor and for the other three *J*s the "war" factor was first. For the six *J*s these two orthogonal judgmental dimensions collectively accounted for quite large proportions of the judgmental variances (83, 89, 88, 76, 70, and 78 percent for judges A, B, C, D, E, and F, respectively). In an attempt to ascertain whether each *J*'s first two factors had some common composition, individual *J* factors were intercorrelated. All 15 correlations (judge A with judge B, judge A with judge C, judge A with judge D, etc.) between the judges' "race" factors were statistically significant beyond the .05 level (they

TABLE 3
INDIVIDUAL *J*'s FACTOR LOADINGS WHICH CORRESPOND TO THE "GROUP'S" FIRST FACTOR

Stimuli	Group	Factor I, "War" Judges					
		A	B	C	D	E	F
1.	.67	.69	.75	.02	.12	.04	.79
2.	-.38	.06	-.49	-.40	-.27	-.43	-.19
3.	.90	.94	.92	.28	.06	.29	.86
4.	-.63	-.59	-.81	-.20	-.05	-.78	-.27
5.	-.86	-.90	-.93	-.32	.02	-.95	-.51
6.	-.79	-.85	-.74	-.46	-.83	-.90	.86
7.	-.65	-.82	-.05	-.09	-.18	-.42	-.89
8.	.67	.71	.86	.08	-.03	.71	.53
9.	-.75	-.08	-.85	-.49	.02	-.29	-.62
10.	.14	.04	-.23	.95	-.74	.14	-.71
11.	.85	.39	.90	.32	-.05	.78	.87
12.	-.79	-.88	-.87	-.49	-.06	-.76	-.75
13.	-.66	-.64	-.89	-.25	-.03	-.54	-.62
14.	.87	.82	.83	.76	.23	.06	-.01
15.	-.82	-.94	-.91	-.50	-.12	-.81	-.69
Percent of variance accounted for	75	67	73	10	9	14	64

TABLE 4
INDIVIDUAL *J*'s FACTOR LOADINGS WHICH CORRESPOND TO THE "GROUP'S" SECOND FACTOR

Stimuli	Group	Factor II, "Race" Judges					
		A	B	C	D	E	F
1.	-.70	-.68	-.62	-.95	-.97	-.02	-.36
2.	.75	.85	.80	.81	.52	.74	.89
3.	-.32	-.09	.11	-.92	-.94	-.12	-.13
4.	.66	.62	.49	.83	.81	.50	.78
5.	.42	.14	.35	.91	.94	.13	.37
6.	.20	-.09	.41	.86	-.17	-.09	-.18
7.	.66	.44	.91	.90	.93	.76	.41
8.	-.65	-.57	-.46	-.97	.05	-.59	-.32
9.	.60	.53	.41	.84	.97	.84	.69
10.	.79	.82	.88	.02	.35	.91	.10
11.	-.43	-.27	-.21	-.88	-.96	-.47	.18
12.	.53	.33	.38	.84	.94	.46	.56
13.	.68	.63	.41	.82	.97	.74	.57
14.	.13	.28	.48	-.48	-.86	.03	.91
15.	.49	.26	.33	.81	.93	.34	.40
Percent of variance accounted for	10	16	16	78	67	56	14

ranged from .49 to .91). With respect to the judges' "war" factor, only nine of the 15 interjudge factor correlations were significant ($p < .05$). It should be noted, however, that five of the six nonsignificant correlations involved judge D. This *J*'s "war" factor apparently was unlike the "war" factor of the other five *J*s.

D. DISCUSSION

It should be quite obvious that correlational similarity (at either the individual *J* level or at the "group" level) can be rather accurately reproduced from two extracted factors, since these two orthogonal similarity-judgment factors account for a rather large amount of the judgmental variance. This would suggest that, although the politician-stimuli may differ on a great number of dimensions or characteristics, *J*s evaluating these stimuli only seem to use about two judgmental (cognitive?) dimensions when considering and estimating their similarities.

What is even more remarkable is that, although some of the *J*s would classify as "villains" the same stimuli that other *J*s would refer to as "heroes," the *J*s exhibited a rather common evaluation strategy-pattern. Such could indicate that this multidimensional method of scaling judgmental responses

may be somewhat free of some of the many frequently encountered sources of judgmental constant errors or bias (e.g., halo effect and logical error). On the basis of the clear and definitive results shown in this exploratory investigation it is possible that more extensive use of the multidimensional scaling approach could be employed profitably by professional pollsters. As an example, pollsters might be able to locate one or more political candidates in multidimensional judgment space along with well-known and well-established political figures (reference anchors). The public's judgment (in multidimensional space) regarding a set of labels for a wide variety of our nation's current problems might also be very revealing. Furthermore, the utilization of the inverse factor analysis approach (of the J_1) could allow one to understand more accurately and simplify the complex relationships between J characteristics and the various judgmental strategies they employ (cognitive-evaluation dimensions?).

Recently the Stone-Coler revision has yielded equally "meaningful" results in a number of other such applied areas, ranging from the subjective similarity of drug-naïvetic experiences to a dimensional analysis of psychiatric patients (manuscripts in preparation). Thus, the authors of this report have reason to believe that the success, relative lack of computational complexity, and great intuitive appeal of their revision of Ekman's content-vector model of multidimensional similarity analysis renders it a highly descriptive and analytic tool for use in nonlaboratory "real-world" settings.

E. SUMMARY

The Stone-Coler revision of Ekman's "content" model of multidimensional similarity analysis was applied to judgments of person similarity made by us psychologist judges. The person-stimuli evaluated consisted of the names of 15 nationally known politicians purposely chosen to represent a broad-spectrum of political postures. The judges, although holding widely differing political philosophies, appeared to share a common frame of reference as only one factor emerged from a factor analysis of interjudge correlations. Correlational similarity was computed at the individual judge level and for the group of judges collectively. Judgmental-evaluation factors for individual judges were similar and were similar to those extracted from the "group" correlational similarity matrix. The two easily labeled judgment-evaluation factors were named the "position on war" and "position on civil rights" dimensions. These two factors accounted for very large percentages of the judgmental variance. The scaling methodology employed was discussed and suggested as a possible new public opinion polling device.

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Laboratory of Clinical-Social Psychophysics and Scaling
The University of North Dakota
Grand Forks, North Dakota 58201



CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

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ADMINISTRATION OF REWARD AND PUNISHMENT IN RELATION TO ABILITY, EFFORT, AND PERFORMANCE*

*Department of Postgraduate Studies and Research in Psychology
University of Mysore, India*

H. S. ESWARA

When environmental factors are neutral, the outcome of an individual's action—success or failure—is determined by two components of his personal factor: the power factor (ability) and the motivational factor (effort).¹ Different action outcomes are responded to differently: we often reward success and punish failure. However, analysis suggests that the conditions determining success or failure be considered in the administration of rewards and punishments. In a study by Weiner and Kukla,² subjects of different samples evaluated favorably or unfavorably pupils varying in their abilities, efforts, and outcomes in a simulated examination setting. "Across three subject groups there were significant main effects of outcome and motivation, and a trend toward the main effect of ability which was of lesser magnitude than that of motivation" (p. 5) on the evaluation of the pupils. The complex interactions within the data are interpreted as reflecting Ss' cultural biases.

In an attempt to replicate the Weiner and Kukla study on a culturally different sample, 25 psychology students (8 males and 17 females) in the University of Mysore, India, were asked to administer reward and punishment to 12 hypothetical students varying in their abilities (high or low), efforts (high or low), and performance in an examination (excellent, average, or

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¹ Heider, F. *The Psychology of Interpersonal Relations*. New York: Wiley, 1958.

² Weiner, B., & Kukla, A. An attributional analysis of achievement motivation.

J. Personal. & Soc. Psychol., 1970, 15, 1-20.

poor).³ The reward-punishment continuum ranged from +5 (maximum reward) to -5 (maximum punishment). The hypothetical students were presented for evaluation in a random order.

Consistent with the Weiner and Kukla findings, the analysis of variance yielded significant main effects due to performance in the examination ($F_{2,48} = 109.42, p < .001$) and to effort on the part of the student ($F_{1,24} = 89.17, p < .001$) on the administration of rewards and punishments. On the other hand, the main effect of ability on the administration of rewards and punishments was not significant ($F_{1,24} = 1.07, ns$). An explanation for the difference may be offered, *a la* Weiner and Kukla, in terms of the relative constancy of ability, a dispositional or invariant property of the individual, as against effort which undergoes change by contingent rewards and punishments.

These findings are also understandable in terms of generally accepted Indian cultural beliefs and philosophical values. Ability is something God given and not within the reach of the individual to be altered; hence it is useless to reward or punish on the basis of one's God given gifts. On the other hand, the concept of "Niskamakarma"⁴ teaches the individual to strive hard and do his duties sincerely to attain his goals without a concern for the results. And therefore, higher effort on the part of the individual is worthy of reward regardless of the outcome. This attitude is clearly evident in that the high effort receives significantly greater reward than low effort at all three levels of performance. Particularly interesting is a significant divergent interaction between effort and performance ($F_{2,48} = 21.43, p < .001$): poor performance combined with high effort is slightly rewarded, while poor performance attributable to low effort is severely punished.

Department of Postgraduate Studies

& Research in Psychology

University of Mysore

Manasa Gangotri, Mysore-6

India

³ Description of a hypothetical student with a specimen rating scale is as follows: "Student A has high abilities; he has put in high efforts; and his performance is excellent. +5 +4 +3 +2 +1 -1 -2 -3 -4 -5." The "hypothetical students" of the present study were essentially similar to those of Weiner and Kukla in their characteristic contents, but the procedure of presenting and evaluating them differed from that of the original study in its details.

⁴ The cultural beliefs and philosophical values invoked here are acceptable to large sections of Indian population. The "Niskamakarma" concept is found in *Bhagavad Gita* which has influenced Indian thought through the ages. Writing of *Bhagavad Gita*, Jawaharlal Nehru contends that "Its popularity and influence have not waned ever since it was composed and written in the pre-Buddhistic age, and today its appeal is as strong as ever in India." *The Discovery of India*. Toronto, Canada: Day, 1946.

PATIENCE, AND GRATIFICATION PREFERENCES AMONG UGANDAN SCHOOLCHILDREN*

Department of Sociology, Makerere University, Kampala, Uganda

MALLORY WOBER AND FRED MUSOKE-MUTANDA

Mischel¹ initiated studies of delayed gratification preferences (DGP) in Trinidad, finding patience for reward commoner among children of East Indian than of African origin. In Uganda Doob² found that less educated people tended to prefer to spend a £5 windfall now rather than invest it, though they also significantly more often said they made plans for a year ahead. Later, Robbins and Pollnac³ in Uganda related DGP to acculturation, and possibly to overestimation of time intervals; Vernon⁴ also in Uganda, related DGP with "perceptual-practical" ability. In the present study 100 Ugandan primary-school children (dichotomized by social class, age, and sex) were given three tests in the Ganda language. One test dealt with DGP; the second asked Ss whether if they had transgressed they would prefer a larger punishment now or a smaller one later; in the third they copied three short time intervals totalling 60 seconds.

High-class girls (7.6) did not score significantly more on DGP than lower-class boys (4.9, $t = 1.34$, $p > .05$); but high-class boys (12.53) exceeded high-class girls (7.6, $t = 3.57$, $p < .01$) and, therefore, also both lower-class boys and girls. On punishment-patience high-class boys (8.7) and girls (6.6, $t = 1.30$, $p > .05$) were similar; but high-class boys exceeded lower-class boys (6.2, $t = 2.36$, $p < .05$) and thus also lower-class girls (5.1). On estimating 60 seconds lower-class boys (34.9) resembled lower-class girls (30.9, $t = .56$, $p > .05$); high-class girls (41.5) were also close to lower-class boys (34.9, $t = 1.54$, $p > .05$); however, high-class boys (54.0) exceeded high-class girls (41.5, $t = 3.1$, $p < .01$) who, in turn, exceeded lower-class girls (30.9, $t = 2.27$, $p < .05$).

* Received in the Editorial Office, Provincetown, Massachusetts, on July 23, 1971, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1972, by The Journal Press.

¹ Mischel, W. Preference for delayed reinforcement: An experimental study of a cultural observation. *J. Abn. & Soc. Psychol.*, 1958, 56, 57-61.

² Doob, L. W. *Becoming More Civilized*. New Haven: Yale Univ. Press, 1960.

³ Robbins, M. C., & Pollnac, R. B. Gratification patterns and acculturation in rural baganda. Paper presented at the joint meetings of the Southern Anthropological Society and the American Ethnological Society, New Orleans, 1969.

⁴ Vernon, P. E. *Intelligence and Cultural Environment*. London: Methuen, 1969.

Among 50 boys, age correlated significantly (.72, .37) with DGP and time estimation respectively, but not significantly (.14) with punishment-patience. Among girls, no such connection with age emerged, correlations with DGP, punishment-patience, and time-estimation being $-.08$, $-.23$, and $.15$ respectively. Among boys (.75) and girls (.37), DGP and punishment-patience correlated significantly. Time estimation correlated insignificantly with DGP and punishment-patience both for boys (.18, .20) and girls (.09, .23).

A different outlook is discernible particularly among the high-class boys, while high-class girls differed significantly from lower-class girls only on time estimation. On no scale did lower-class boys differ significantly from lower-class girls. Robbins and Pollnac's idea that time estimation might relate directly to DGP has not been substantiated. Differences found according to sex and social class suggest that Mischel's data may need reanalysis lest the "ethnic differences" he appeared to demonstrate may have been due to these two parameters.

Department of Sociology
Makerere University
P. O. Box 7062
Kampala, Uganda

PERCEPTION OF VISUAL ILLUSIONS IN A SAMPLE OF AFGHAN BOYS*¹

Colorado State University

JACOB E. HAUTALUOMA AND ROSS J. LOOMIS

The influence of cultural factors on perception has become an important research topic in social psychology. Segall, Campbell, and Herskovits² have shown that even the perception of illusions seems to vary across cultural groups, depending on the groups' visual experiences; according to them, the most promising theory to explain the differences is the extent to which individuals live in a "carpentered world."

Subjects in the present study were 20 boys between the ages of 8 and 10 years from a village near Shewa on the Southern edge of Nuristan in Afghanistan. Local taboos regarding contact with females made it virtually impossible to test girls. Additional requests to measure more children were denied. Approximately one-third of the boys had a trachoma-like condition in their eyes, presumably because the region was dusty. Their homes were on the Southern fringe of the Pamir Mountains, and their usual view included higher mountains to the North, and high rocky foothills in all other directions. Buildings in the area are of mud and logs, and are built following straight lines and right angles. The Nuristanis appreciate color in their clothes and decorations, and no major color is avoided in the environment. The area is primarily agricultural and the language spoken is Pashai. The boys were tested in a schoolroom with the Segall *et al.* stimulus material.

The average number of illusion supporting responses was scored for each of five geometric illusions and the means compared with those of Evanston, Illinois, children. Comparisons were as follows: Muller-Lyer, Afghan $\bar{X} = 4.35$, Evanston $\bar{X} = 5.57$ ($t = 3.29$, $p .01$); Sander parallelogram, Afghan $\bar{X} = 4.4$, Evanston $\bar{X} = 3.33$ ($t = 4.46$, $p = > .001$); horizontal-vertical

* Received in the Editorial Office, Provincetown, Massachusetts, on July 26, 1971, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1972, by The Journal press.

¹ A complete summary of data from this study has been deposited with the American Society for Information Science. Order NAPS Document No. 01746 from ASIS National Auxiliary Publication Service. C/O CCM Information Corporation, 866 Third Avenue, New York, New York 10022; remitting \$2.00 for each microfiche or \$5.00 for each photocopy.

² Segall, M. H., Campbell, D. T., & Herskovits, M. J. *The Influence of Culture on Visual Perception*. New York: Bobbs-Merrill, 1966.

┐, Afghan $\bar{X} = 6.00$, Evanston $\bar{X} = 4.86$, $t = 3.8$, $p = .001$; horizontal-vertical \perp , Afghan $\bar{X} = 6.45$, Evanston $\bar{X} = 5.64$, $t = 2.38$, $p = .01$; perspective drawing, Afghan $\bar{X} = 6.9$, Evanston $\bar{X} = 5.04$, $t = 9.3$, $p = > .001$. As Segall *et al.* note, caution should be used in making interpretations based upon multiple t tests.

With one exception, the Sander illusion, these data are consistent with trends reported earlier by Segall *et al.* Samples from Western cultures (as typified by American and European groups) are more inclined than Eastern ones to see the Muller-Lyer and less susceptible to the two horizontal-vertical illusions. However, major differences can also be shown between groups within the same continent. For example, the African Beté children are significantly less susceptible to horizontal-vertical illusions than Anko children, as noted by Segall *et al.* In earlier studies Western groups showed more illusion responses to the Sander stimuli than the non-Western groups. Results of the present study showed just the opposite with the Afghan boys giving more illusion responses than the Evanston sample.

In general, the behavior of the sampled Afghan boys supports the assumption that illusion response habits are based, in part, on learned components stemming from the cultural and ecological characteristics of the visual environment. While the boys have experienced some degree of rectangularity in their environment it is safe to assume less of a carpentered world is experienced than is true of European and American groups.

Department of Psychology
Colorado State University
Fort Collins, Colorado 80521

IDENTIFICATION PROCESSES AMONG CHANGE AGENTS IN TECHNICAL SCHOOLS OF AFGHANISTAN*¹

University of the Saarland, Germany

LUTZ H. ECKENSBERGER AND GUNTER F. SCHNEIDER

A modified semantic differential was applied for measuring identification processes among the following three groups: (a) German teachers (G); (b) Afghan teachers who were trained in Germany for at least two years (AT); and (c) Afghan teachers who were never in a foreign country (AN).²

The study used as subjects 76 Afghan teachers, 38 trained (AT) and 38 not trained (AN). Both groups were comparable regarding place of birth, family status, mother tongue, socioeconomic background, education, and special branch of teaching. The AT were slightly older than the AN. The technical schools were located in Kabul and Chost. The modified semantic differential was translated into Afghan colloquial speech and reevaluated according to the criteria of excellence.

In order to define the amount and directions of the identification processes among the above-mentioned groups, the following four instructions were given to each subject: (a) Describe yourself in terms of what you would like to be. (b) Describe the typical German teacher. (c) Describe the typical Afghan teacher who has been trained in Germany. (d) Describe the typical Afghan teacher who has not been trained in Germany.

Difference measures were obtained by ascertaining the difference between the perceiver's description of himself (ideal self) and his description of a model (G, AT, or AN).

It was hypothesized that the amount of identification among the three groups would fall in the following sequence: $AT - G > AN - G > AN - AT > AT - AN$. Since the statistical prerequisites were fulfilled, these hypotheses were tested by means of an ANOVA two-factor design with repeated measurement on one factor.³

* Received in the Editorial Office, Provincetown, Massachusetts, on August 5, 1971, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1972, by The Journal Press.

¹ A more detailed mimeographed version of the findings, including tables and figures, will be sent by the authors on request.

² The research was sponsored by the Ministry for Economic Cooperation of the Federal Republic of Germany.

³ Winer, B. J. *Statistical Principles in Experimental Design*. New York: McGraw-Hill, 1962.

The results indicated a sequence of means of the differences that was slightly different from the original assumption, as follows: $AT - G (M_d = 8.94) > AN - AT (M_d = 9.64) > AN - G (M_d = 10.92) > AT - AN (M_d = 12.03)$.⁴ The ANOVA showed neither a main effect of the model nor a main effect of participation in a training program, but a significant interaction between participation in a training program and identification with a model ($df = 1, F = 17.42, p < .01$). All simple main effects, defining the interaction effect more closely, were significant.

The results indicate that the AT group serves as a psychological link between the G and the AN group. The participation in a training program in a foreign country seems to facilitate the social change processes in technical schools.

From a practical standpoint it would appear essential to reinforce the AT group visibly, since it serves the AN group for a model of identification.

*Psychologisches Institut
der Universität des Saarlandes
Saarbrücken, Fed. Rep. Germany*

⁴ Low d-scores = strong identification and *vice versa*.

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 87, 147-148.

A DEVELOPMENTAL STUDY OF RELATIONSHIPS BETWEEN BIRTH ORDER AND LEADERSHIP STYLE FOR TWO DISTINCTLY DIFFERENT AMERICAN GROUPS*

Institute for Child Study, University of Maryland

ROBERT C. HARDY

Recently Chemers¹ argued that among American children, firstborns are more dependent on adult authority and, consequently, become more task-oriented than later borns, while later borns are influenced more by peers slightly older than they, thus becoming more relation-oriented. To investigate this theory Chemers administered Fiedler's² least preferred co-worker scale (LPC) which is a bipolar adjective checklist, where the individual rates the person with whom he has had the most difficulty completing some task. A high LPC individual rates his least preferred co-worker more positively than the low LPC individual. Fiedler³ labeled these high and low LPC individuals as relation-oriented and task-oriented, respectively.

Chemers,⁴ using white, middle-class undergraduate students, found that a higher percentage of firstborns than later borns were low LPC individuals, and that a higher percentage of later borns than first borns were high LPC individuals. The present study expanded on Chemers' population, using two distinctly different groups. First, 66 white, middle-class undergraduate students from a large midwestern university, and second, 106 lower middle-class fifth- and sixth-grade Negro elementary students from Washington, D. C., were investigated. This second population differs from Chemers' in age and race.

* Received in the Editorial Office, Provincetown, Massachusetts, on July 13, 1971. Copyright, 1972, by The Journal Press.

¹ Chemers, M. The relationship between birth order and leadership style. *J. Soc. Psychol.*, 1970, 80, 243-244.

² Fiedler, F. A Theory of Leadership Effectiveness. New York: Wiley, 1967.

³ See footnote 2.

⁴ M. Chemers, p. 244 (see footnote 1).

Both populations were administered Fiedler's LPC scale. However, the instructions given to them varied slightly. The university students were asked to think of a person with whom they could work least well on a task. For the elementary students the word *task* was changed to the word *project*. (Previous experimentation with a similar population revealed that the word "task" was not as readily understood by this age group as the word "project.") Further, prior to the administration of the scale to the elementary students, the meaning of any unfamiliar adjectives used in the scale was reviewed for the entire group. After the scale was completed, birth-order information was obtained from the students.

By means of a median split, subjects from each population were labeled as high or low LPC. The mean high LPC group values were 99.57 and 96.43 for the university and elementary subjects respectively, while the mean low LPC group values were 58.63 and 51.32, respectively. For the university subjects, 29% of the firstborns were high LPC, and 71% were low LPC, while 60% of the later borns were high LPC, and 40% were low LPC. For the elementary subjects, 26% of the firstborns were high LPC, and 74% were low LPC, while 55% of the later borns were high LPC, and 45% were low LPC. A birth order \times LPC contingency table was constructed for each population. The chi-square values for the university and elementary subjects were 5.66 and 5.19, respectively. Both these values were significant at .05 or less with one degree for freedom. Thus, as in Chemers' study, birth order and LPC appear to be significantly related. The conclusion of Chemers⁵ that firstborns respond more to authority and later borns are more socially oriented is supported in this study. However, in the present study these relationships were obtained with different age and cultural groups.

Institute for Child Study
University of Maryland
College of Education
College Park, Maryland 20742

⁵ See footnote 4.

OPINION CHANGE AS A FUNCTION OF THE RACE OF THE EXPERIMENTER, THE COMMUNICATION SOURCE, AND THE SUBJECT*

Department of Psychology, University of South Florida, Tampa

SALVATORE E. CURTO AND FRANK SISTRUNK

There is a substantial literature on persuasion and opinion change, on racial prejudice, and on studies employing black and white subjects.¹ Several important classes of variables in the process of opinion change and in black-white influence have been identified. However, there are empirical inconsistencies which suggest the need for further research combining critical variables of this influence process and examining any interactions of these variables.

The present study was planned in a factorial design to examine the relative effects of race on opinion change in terms of black and white experimenters, black and white communicators, and black and white Ss. Forty male American high school students from 17 to 18 years of age were scheduled in groups of 10 to participate, ostensibly, in a survey of the opinions of young people. A white and a black group were assigned to a black experimenter, and to a white experimenter.

The study was conducted in three phases. First the Ss were presented with a questionnaire which established their individual opinions regarding a cure for cancer, on issues of conservation, and on the image of the railroad industry. The second phase followed directly and presented social influence through the use of three printed communications which stated arguments related to the three areas of opinion originally measured, and which were identified as articles from a professional news service. The influence source was presented by means of a picture of the alleged author in the upper left-hand corner of each communication. Three pairs of pictures (black-white combinations) had been matched on several facial criteria and selected by a panel of judges. The ordering and combinations of the communicator's race and the content areas were counterbalanced within the four experimental groups. The third phase

* Received in the Editorial Office, Provincetown, Massachusetts, on July 16, 1971. Copyright, 1972, by The Journal Press.

¹ For example, see Dreger, R. M., & Miller, K. S. Comparative psychological studies of Negroes and whites in the United States: 1959-65. *Psychol. Bull. Monog. Suppl.*, 1968, 70 (3), Part 2, 1-58; and Chapters 21, 25, & 37 in Lindzey, G., & Aronson, E., *The Handbook of Social Psychology* (2nd ed.). Reading, Mass.: Addison-Wesley, 1969.

was the administration of a second questionnaire, a duplicate of the first, immediately following the influence phase.

Comparisons were made between the opinions expressed by each *S* on the first and second questionnaires. Persuasion was defined as any amount of change from an *S*'s original opinion toward the position stated by the communication, and rebellion was opinion change away from the communication. Factorial analyses of variance performed on the dependent measures of persuasion, rebellion, and net influence revealed no statistically significant effects. *A priori* interest in the combined effect of the three race-related variables also dictated comparisons of the means within the three-way interactions, and Duncan's New Multiple Range Tests revealed no significant differences among those means.

The nonsignificance of the overall results, although not predicted, may be interesting and suggestive. The literature on opinion change is not completely consistent, and the effects of influence exerted through racial membership are not clearly understood. It may be that these nonsignificant results were due to the nonracial nature of the communications. And perhaps, experimenter bias, the subtle and unintentional distortion of results, may not be as general a phenomenon as commonly presumed, but more circumstantially determined. In any event, the present results suggest caution and the desirability of further investigation of the circumstances under which meaningful differences may be manifested.

Coordinator of Social Sciences
State University System of Florida
107 West Gaines Street
Tallahassee, Florida 32304

VERBAL CONDITIONING OF "AWARE" SUBJECTS¹

State University of New York at Albany

R. BOB SMITH III, BOB HELM, AND JAMES T. TEDESCHI

Levy² had a confederate (*C*) preinform *Ss* about the contingency in the verbal conditioning paradigm developed by Taffel.³ Superior performance was obtained as compared to nonpreinformed *Ss*. Sapolsky⁴ told *Ss* that they would find *E* "congenial" or "irritating," on the basis of tests *Ss* and *Es* had taken. The "high-attraction" *E* elicited more reinforced verbal responses from *Ss* than did the "low attraction" *E*. Because Sapolsky's attraction-inducement procedure can be interpreted in terms of demand characteristics, the present study attempted to manipulate *S-E* similarity without implying that *Ss* should or should not cooperate with *E*. The present study attempted to replicate both of the above studies in a 2×2 design which included similarity-dissimilarity of *S* and *E*, and *Ss* were either preinformed of the contingency or not.

A *C* entered the waiting room and informed half of 40 male *Ss* individually of the reinforcement contingency in the experiment he had "just participated in." With the other *Ss*, *C* said nothing. *E* took *S* to another room, explaining that tests *S* had previously completed indicated that *E* and *S* were either similar or dissimilar in attitudes.

The *E* and all *Ss* sat at opposite ends of a table with a low center partition. A different past-tense verb and six pronouns (YOU, THEY, I, WE, HE, SHE) appeared on each of 40 index cards. The *Ss* responded to each of the 40 cards by verbalizing a sentence using the verb and any one of the pronouns. When *S* selected I or WE in conjunction with the stimulus verb, *E* said "good."

Critical response frequencies over four blocks of 10 trials yielded a linear comparison ($F = 8.46$, $df = 1/36$, $p < .01$) in a $4 \times 2 \times 2$ repeated measures ANOVA, verifying a learning effect. The preinformation manipula-

¹ Received in the Editorial Office, Provincetown, Massachusetts, on August 2, 1971. Copyright, 1972, by The Journal Press.

² The present investigation was supported in part by Grant Number GS-27059 from the National Science Foundation to the third author.

³ Levy, L. H. Awareness, learning, and the beneficent subject as expert witness. *J. Personal. & Soc. Psychol.*, 1967, 6, 365-370.

⁴ Taffel, C. Anxiety and the conditioning of verbal behavior. *J. Abn. & Soc. Psychol.*, 1955, 51, 496-501.

⁵ Sapolsky, A. Effect of interpersonal relationships upon verbal conditioning. *J. Abn. & Soc. Psychol.*, 1960, 60, 241-246.

tion produced a main effect on frequency of critical responses ($F = 6.25$, $df = 1/36$, $p < .02$). Preinformed Ss selected *I-WE* more frequently ($X = 21.9$) than did nonpreinformed Ss ($X = 17.4$). Dissimilarity condition Ss emitted nonsignificantly fewer responses ($X = 18.9$) than did similarity condition Ss ($X = 21.9$).

A number of factors may explain the failure of this study to support the similarity hypothesis. The Ss may not have considered the similar-aged Es as peers, or perhaps the similarity manipulation placed too great a reliance on Ss' ability to attach importance to tests taken much earlier in a different setting. In any case, the effect of liking on verbal conditioning remains unclear.

The present observation that Ss in preinformed conditions had higher response levels, but not better learning rates, confirms the preinformation hypothesis and provides a replication of Levy's results.

Department of Psychology

State University of New York at Albany

Albany, New York 12203

CULTURAL DIMENSIONS RELATED TO PARENTAL VERBALIZATION AND SELF-CONCEPT IN THE CHILD*¹

Rosary Hill College

THOMAS W. MILLER

American based studies² have demonstrated that verbal appraisal reflected from others affects self-concept. Weiss³ found that mother evaluations toward the child appeared to be of much greater importance than father evaluations for both sexes. Since mother assumes the earliest importance and spends more time than does the father with the child, Weiss concluded that it is not surprising that mother evaluations are most influential in the development of the child's self-image. Ginott⁴ contended that the manner in which the parent responds verbally to the child's behavior significantly affects the self-esteem of the child. The more verbally descriptive a parent is in responding to the child's behavior (i.e., does not evaluate behavior), the greater is the likelihood that the child will have high levels of self-esteem, whereas the more verbally judgmental a parent is in responding to a child's behavior (i.e., does evaluate behavior), the greater the likelihood that the child will have low levels of self-esteem. For example, "the paint has spilled" would be descriptive, whereas "you spilled the paint" would be judgmental.

Two hundred eighth grade children and their mothers were randomly selected from one metropolitan school system and five suburban school districts in Northeastern United States. Represented were a wide range of educational, social, and ethnic backgrounds. The independent variable was the score obtained on the Parental Response Inventory,⁵ and the dependent variable the score obtained on the Self-Esteem Inventory.⁶

* Received in the Editorial Office, Provincetown, Massachusetts, on August 5, 1971. Copyright, 1972, by The Journal Press.

¹ This research was supported by Research Foundation of State University New York Grant No. 50-8890-F.

² Videbeck, R. Self-conception and the reaction of others. *Sociometry*, 1960, 23, 351-362. Zimbardo, P. & Formica, R. Emotional comparison and self-esteem as determinants of affiliation. *J. Personal.*, 1963, 31.

³ Weiss, J. Home environmental factors related to achievement motivation and self-esteem. Unpublished Doctoral dissertation, University of Chicago, 1969.

⁴ Ginott, H. G. *Between Parent and Child*. New York: Macmillan, 1965.

⁵ Miller, T. An inquiry into differential response patterns of clinicians and policemen. Unpublished paper, State University of New York at Buffalo, 1969.

⁶ Coopersmith, S. Self-esteem in children and some behavioral correlates. Unpublished Doctoral dissertation, Cornell University, Ithaca, New York, 1960.

The relationship between maternal descriptiveness in negative situations and the child's self-esteem was confirmed for inner city sample only. The results suggest that the more descriptive the parent, the greater the child's self-esteem; the more judgmental the parent, the lower the child's self-esteem. A 2×2 sex by race analysis of variance for the black inner city sample and white suburban sample yielded significant univariate F ratios for the main effect of race on maternal descriptiveness in negative situations. The main effect of race is confounded by the all black inner city sample and the all white suburban sample in that race also represents sociocultural stratification level. Thus, these differences represent the differences between lower class inner city blacks and middle-class suburban whites.

The results raise speculation as to cultural differences and parental style of verbalizing. The multipurpose role inner city mothers often assume may explain this in part. The "life of necessity," where mother bears sole responsibility for child rearing and serves as head of the household, may result in difficulty in selecting appropriate responses. Consequently, her ability to respond descriptively is impaired by the multiplicity of factors entering the situation. Where greater freedom in role and a "life of options" is found, the mother may experience less difficulty in communicating in a descriptive manner. Such factors as her education, exposure to current child rearing practices, and environmental pressures are also viewed as influential in affecting maternal verbal response patterns.

*Office of Counseling Services
Rosary Hill College
4380 Main Street
Buffalo, New York 14226*

TEST ANXIETY, SEX, AND ORDINAL POSITION*

Lehman College and Finch College

ARLINE L. BRONZAIT¹ AND GILDA F. EPSTEIN

Few studies have examined the relationship of birth order to test anxiety. Rosenfeld² found later born females to be more test anxious than firstborns in one of five samples. Sampson and Hancock³ reported that high school second borns of both sexes tended to score higher in test anxiety than firstborns ($p < .10$). Sarason⁴ found no differences between firstborns and later borns on a test anxiety measure.

Since instruments used in these studies measured negative test-taking attitudes only, and since few studies correlating test anxiety with other variables report female norms, this study was designed to measure positive, as well as negative, attitudes towards tests for male and female firstborns and later borns.

The College Student Questionnaire (CSQ)⁵ and the Alpert-Haber Achievement Anxiety Test (AAT) were administered to 711 freshmen (353 males, 358 females) entering Lehman College in September 1970. Two items in the CSQ provided birth order information. The AAT contains two subscales: AAT+ measuring positive attitudes towards tests and the AAT— measuring negative attitudes.

Mean scores on the AAT were analyzed for sex and ordinal position.

Mean scores on the AAT— were as follows: (Male) Only—29.41; Oldest—28.66; Youngest—29.69; In-between—29.12; Total—29.21; (Female) Only—31.12; Oldest—28.89; Youngest—30.48; In-between—29.75; Total—30.13. An analysis of variance of AAT— data yielded a significant main effect for sex, indicating more debilitating test anxiety for females than for males ($p < .05$). No differences due to birth order were found.

* Received in the Editorial Office, Provincetown, Massachusetts, on August 5, 1971. Copyright, 1972, by The Journal Press.

¹ This research was supported, in part, by a grant from the City University of New York Faculty Research Program.

² Rosenfeld, H. M. Relationships of ordinal position to affiliation and achievement motives: Direction and generality. *J. Personal.*, 1966, 34, 467-479.

³ Sampson, E. E., & Hancock, F. T. An examination of the relationship between ordinal position, personality, and conformity. *J. Personal. & Soc. Psychol.*, 1967, 5, 398-407.

⁴ Sarason, I. G. Birth order, test anxiety, and learning. *J. Personal.*, 1969, 37, 171-177.

⁵ Distributed by the Educational Testing Service, Princeton, New Jersey

Mean scores on the AAT+ were as follows: (Male) Only—23.59; Oldest—24.55; Youngest—23.72; In-between—23.31; Total—23.83; (Female) Only—22.88; Oldest—23.79; Youngest—22.25; In-between—23.29; Total—23.12. The main effect for sex on the AAT+ approached significance, with males showing more facilitating test anxiety ($p < .10$). The main effect for birth order also approached significance ($p < .10$). Examination of the mean scores indicates that "oldest" children have more facilitating test anxiety than any other group.

The needed replications of this finding of sex differences in test anxiety will require prior consideration of several methodological problems. Most test anxiety scales appear to have been developed with all-male samples, and yet questions of test anxiety may have different meanings to men and women. Furthermore, since test anxiety scales are typically self-report, paper-and-pencil measures, differential cultural norms for the acceptability of admitting anxiety may influence the data.

Department of Psychology
Herbert H. Lehman College
of the City University of
New York
Bedford Park Boulevard West
Bronx, New York 10468

Department of Psychology
Finch College
52 East 78 Street
New York, New York 10021

CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 87, 157-158.

LOCUS OF CONTROL AND ATTITUDES TOWARD WOMEN'S LIBERATION IN A COLLEGE POPULATION*

Department of Psychology, University of Maine

RICHARD M. RYCKMAN, JANET L. MARTENS, WILLIAM C. RODDA,
AND MARTIN F. SHERMAN

The Women's Liberation struggle has created considerable interest in this country recently. Books by Betty Friedan¹ and Kate Millet² have described American women as second-class citizens who face discrimination in virtually every phase of their lives. Despite their pleas for remedial social action, however, many women have shown little willingness to support the movement.

The present study was an attempt to account for these differences in expressed willingness to participate in corrective social action through the use of Rotter's internal *versus* external control of reinforcement construct. In particular, it was hypothesized that internally oriented women would express a greater commitment to social action designed to end discrimination against women than externals. For men, the nature of the relationship between the locus of control and commitment variables was not readily apparent. Perhaps men could be assumed to favor continuation of the *status quo* in their role relationships with women. This viewpoint would result in a lack of commitment to the struggle, regardless of locus of control orientation.

Men and women undergraduates in an introductory class completed a battery of tests which included the I-E Scale,³ the Marlowe-Crowne Social

* Received in the Editorial Office, Provincetown, Massachusetts, on June 4, 1971. Copyright, 1972, by The Journal Press.

¹ Friedan, B. *The Feminine Mystique*. New York: Dell, 1963.

² Millet, K. *Sexual Politics*. Garden City, N. J.: Doubleday, 1970.

³ Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. *Psychol. Monog.*, 1966, 80, Whole No. 609.

Desirability Scale,⁴ and the Gold-Ryckman Student Activism Scale.⁵ Three weeks later, a student confederate went into the same class, posing as an advocate of Women's Liberation, and asked each student to indicate her or his degree of interest in one of the following program activities: (a) dropping all of my courses in order to campaign actively for Women's Liberation; (b) joining the newly formed Women's Liberation group on campus which will stress job and wage equality between the sexes; (c) obtaining information by mail in order to argue effectively with all of my classmates; (d) talking to some of my friends about Women's Liberation; and (e) I would not be interested in any of the foregoing. Pilot work had already established the internal reliability of this scale (Kendall's $W = .64$, $p < .001$).

All of the data were then subjected to chi-square analyses. The results indicated that both men and women undergraduates did not perceive commitment to Women's Liberation activities as desirable behavior, a finding which is not surprising in light of the generally unfavorable publicity given to most feminist organizations by the national media. It was interesting to note, however, the absence of a relationship between the activist and commitment variables. This outcome suggests that, while proactivist students may work to effect major social change in areas such as poverty, international conflict, and racism,⁶ they may perceive problems confronting women as a separate issue or as no issue at all.

The major results indicated that internal women expressed greater commitment to Women's Liberation activities than externals ($\chi^2 = 4.44$, $df = 1$, $p < .05$). As speculated, the locus of control variable was unrelated to commitment for men ($\chi^2 < 1$, $df = 1$, n.s.). Most of them (85%) expressed minimal interest in the various program activities. Interestingly, a number of them also included an additional category on their checklists in order to express their intense disliking for Women's Liberation. Future research might examine the relationship between personality differences in locus of control and unfavorable attitudes toward Women's Liberation activities for both women and men.

Department of Psychology
University of Maine
Orono, Maine 04473

⁴ Crowne, D. P., & Marlowe, D. A new scale of social desirability independent of psychopathology. *J. Consult. Psychol.*, 1960, 24, 349-354.

⁵ For a list of the scale items with attendant reliability and validity data, write directly to the senior author, c/o Department of Psychology, University of Maine, Orono, Maine 04473.

⁶ Keniston, K. *The Uncommitted*. New York: Harcourt, Brace & World, 1965.

MACHIAVELLIANISM AND POLITICAL BEHAVIOR*¹

Occidental College

DAVID L. COLE²

This study investigated the relationship between scores on the Machiavellian Scale and student political attitudes and activities. It investigated the notion, from Christie and Geis, that Machiavellians avoid political extremism.³ Subjects were 60 men and 49 women, in two sections of Introductory Psychology at Occidental College. Subjects completed the Mach V Scale at the outset of the fall term, 1970, and a questionnaire concerning their political attitudes and activities at the time of the national elections in November 1970. All replies were anonymous, the two sets of data being matched by a coding process.

The mean Mach score was 102.76 (sigma 8.55). Men averaged 104.56 (sigma 8.59) and women 100.55 (sigma 8.31). This sex difference is significant at the .01 level, but limited to lower division students. For upper division subjects the male mean was 100.06 and the female mean 101.25. The total range of scores was 84-124.

The Mach Scale divides into two types of items, those reflecting Machiavellian *views* ("Barnum was probably right when he said that there's at least one sucker born every minute.") and those describing Machiavellian *tactics* ("It is wise to flatter important people.") Analysis shows that nearly all the variance among the subjects was on the Mach *views* items. With rare exception, Mach *tactics* items were rejected. Differences among these subjects stemmed almost entirely from the extent to which they endorsed or rejected expressions of cynicism about people.

"High Machs" here refers to those scoring above the group mean, "low Machs" to those scoring below it. Little political radicalism was evident among the students. They believed our governmental system should be changed, but hoped to change it by working within the system. High Machs were less willing to espouse change without knowing what the change would be

* Received in the Editorial Office, Provincetown, Massachusetts, on June 18, 1971. Copyright, 1972, by The Journal Press.

¹ Adapted from paper presented to California State Psychological Association, San Diego, California, January 29, 1971.

² Miss Carol Gaston aided the author in the data analysis for this paper.

³ Christie, R., & Geis, F. *Studies in Machiavellianism*. New York: Academic Press, 1970. P. 354.

(.01 level). More high Machs admitted to having been in political demonstrations and, among all who had been in them, cited more frequent participation (.01 level). In matters of political opinion, high Machs were more apt to either "strongly agree" or "strongly disagree," regardless of the issue or direction (.01 level).

The low incidence of political extremism prevented a good test of the hypothesis of Christie and Geis. However, they would probably anticipate the present finding that the high Mach is more cautious about demanding change without knowing the alternative. He has stronger convictions, and is more apt to act on them, but not when he does not know where such action may lead.

The dissatisfaction of these students with their governmental system, coupled with their cynicism as revealed by their response to the *views* items, added to their rejection of the persuasive techniques inherent in Mach *tactics*, appears to create a fertile psychological climate for destructive unrest, should frustration increase. They are ready to act without plan, techniques, or goal. If we, as scientists, critique society, does our ethical commitment stop there? Might not social psychologists serve both students and the larger society if they gave more attention to informing students on effective techniques of persuasion?

Department of Psychology

Occidental College

Los Angeles, California 90041

MASCULINITY-FEMININITY AND CONFORMITY*

Office of Academic Affairs, State University System of Florida, Tallahassee

FRANK SISTRUNK

For many years one of the better established facts of social psychology has been that American females are generally more susceptible to group pressures on their judgments than are American males.¹ However, a recent report by Sistrunk and McDavid² challenged the explanation of this sex and conformity finding. These investigators contended that this common finding might have been an artifact of typically masculine experimental tasks. Hypothesizing an inverse relationship between task sophistication and conforming behavior, they utilized in their experiments a specially developed judgmental instrument, constructed to control for the sex-relatedness of the task items. The main effect of sex of the Ss did not attain statistical significance in any of their studies, but the sex factor did interact with the nature of the task items, producing greater female conformity on masculine items, greater male conformity on feminine items, and no differences on neutral items.

The present study was designed to subject the Sistrunk-McDavid hypothesis to more strenuous test under more extreme circumstances. Comparisons were made of the conforming behavior, not just of males and females, but of highly masculine males and highly feminine females. If sex differences in conformity could be meaningfully attributed to cultural role prescriptions, then the differences should surely appear when the male and female roles were contrasted on a culturally defined basis (masculinity-femininity), and they should appear regardless of the nature of the task.

From a sample of 42 American college students who were measured on the Guilford-Zimmerman masculinity scale, the 10 most masculine (scoring 23 or above) and the 10 most feminine (scoring 10 or below) were selected to be the final contrasted Ss for the study. The Ss were subjected to majority pressures on the judgments that they expressed on the Sistrunk-McDavid instrument.³ This instrument included both easy and difficult items, which also had been rated by type as masculine, neutral, or feminine.

* Received in the Editorial Office, Provincetown, Massachusetts, on July 6, 1971. Copyright, 1972, by The Journal Press.

¹ For example, see review by Nord, W. R. Social exchange theory: An integrative approach to social conformity. *Psychol. Bull.*, 1969, 71, 174-201.

² Sistrunk, F., & McDavid, J. W. Sex variable in conforming behavior. *J. Personal. & Soc. Psychol.*, 1971, 17, 200-207.

The results indicated that there was still not a significant difference in conformity between the contrasted masculine and feminine Ss on this sex-controlled task ($F_{1,18} = 3.25, p > .05$). The main effect of task difficulty ($F_{1,90} = 40.42, p < .001$), the task difficulty by item-type interaction ($F_{2,90} = 6.38, p < .005$), and the masculinity-femininity of Ss by item-type interaction ($F_{2,90} = 7.53, p < .005$) were significant and replicated the results of Sistrunk and McDavid. The major finding besides the nonsignificance of the sex factor was the differential behavior of the masculine and feminine Ss on the masculine, feminine, and neutral items. While the feminine Ss conformed more than the masculine Ss on the masculine tasks (49% vs. 23%), they did not conform significantly more on the neutral tasks (36% vs. 35%). On the feminine tasks the feminine Ss conformed less (29% vs. 34%), but not significantly less than the masculine Ss.

Thus, the findings of this study generally supported the hypothesis of an inverse relationship between task sophistication and conforming behavior. Certainly, a stronger basis was provided for the contention that the traditional finding of greater female conformity has been misleading and that sophisticated accounts of conformity may no longer ignore the differential effects of the nature of experimental tasks on Ss of varying characteristics.

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American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monogr.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neural.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
Educational	<i>Educ.</i>	School	<i>Sch.</i>
Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
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VOLUME 70—July-December, 1964

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VOLUME 71—January-June, 1965

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VOLUME 72—July-December, 1965

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VOLUME 73—January-June, 1966

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VOLUME 74—July-December, 1966

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VOLUME 76—July-December, 1967

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VOLUME 84—July-December, 1971

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(Manuscripts are printed in the order of final acceptance)

Emotional involvement and subjective distance: A summary of investigations BY ULF LUNDBERG, OSWALD BRATFISCH, AND GÖSTA EKMAN	169
A cross-cultural study of eidetic imagery among Australian Aboriginal children BY PETER W. SHERMAN AND SHELLEY J. STEWART	179
Hopi initiation rites—A case study of the validity of the Freudian theory of culture BY GARY GRANBERG	189
Content analysis of Egyptian stories BY JAMES A. BENNETT	197
The effect of anticipating the continuation of role playing on attitude change BY GARY G. TAYLOR AND KAY H. SMITH	205
Role perception and the relative influence of the perceiver and the perceived BY JOHN C. TOWNSE	215

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The perception and classification of collective behavior	219
BY GORDON W. RUSSELL	
Impression formation as a function of self <i>versus</i> other as source of the information	229
BY RICHARD R. IZZETT AND WALTER LECHINSKI	
The point fallacy and latitude dimensions of attitude change	231
BY LAWRENCE A. RUDIN AND WILLIAM R. HOOD	
Generalization of operant conditioning of verbal output in three-man discussion groups	241
BY KENNETH H. DAVID	
The effect of underlying situational characteristics on the risky shift phenomenon	251
BY ROBERT BLITZ AND DONALD F. DANSENEAU	
Ethnic stereotypes: An alternative assessment technique, The stereotype differential	259
BY R. C. GARDNER, D. M. KIRBY, F. H. GOROSPE, AND A. C. VILLAMIN	
Attribution of person concepts by role accessibility and interaction outcomes	269
BY JOHN C. TOWNAY	
The effects of differential rank on maintaining stability in the dyad	273
BY EARL F. LUNDGREN	
Moral values: Personality and demographic correlates of attitudes toward crimes without victims	279
BY JOHN HOLLANDER	
Conformity in petition-signing as a function of issue ambiguity	287
BY JOHN M. PHILLIPS	
Esteem and the effectiveness of a verbal reinforcer	291
BY BOB HELM, ROBERT C. BROWN, JR., AND JAMES T. TEDeschi	
Effects of involvement, competence, and discrepancy on opinion change	301
BY VALERIAN J. DERLEGA	
CROSS-CULTURAL NOTES	
Attitudes toward the disabled—A cross-cultural study	311
BY M. S. TSANO	
Prejudice and personality in white South Africa: A "differential learning" alternative to the authoritarian personality	319
BY CHRISTOPHER ORPEN AND LESLEY VAN DER SCHYFF	
REPLICATIONS AND REFINEMENTS	
Reinforcement and attitude change: Results suggesting the importance of demand characteristics	319
BY GARY G. TAYLOR AND JON I. YOUNG	
Leadership selection and group performance: An expanded replication	319
BY LOUIS A. FRAAS	
Signature size and status	319
BY BLAIR R. SWANSON AND RAYMOND L. PRICE	
CURRENT PROBLEMS AND RESOLUTIONS	
Examiners' race and subjects' responses to an attitude scale	321
BY JEROME M. SATTLER, DANIEL SKENDERIAN, AND ANDREW J. PABSEN	
Environmental attitudes and actions	323
BY LEONARD BICKMAN	
BOOKS RECENTLY RECEIVED	323

EMOTIONAL INVOLVEMENT AND SUBJECTIVE DISTANCE: A SUMMARY OF INVESTIGATIONS*¹

Psychological Laboratories, University of Stockholm, Sweden

ULF LUNDBERG, OSWALD BRATFISCH, AND GÖSTA EKMAN²

A. INTRODUCTION

The present report concludes a series of investigations carried out at our laboratories, starting from the well-known fact that one is much less concerned about what happens at a great distance, than about what happens close by. The phenomenon was investigated by relating emotional involvement to subjective geographic distance.

Ekman and Bratfisch (8) started this series with a "paper and pencil" study, where names of international cities were used as stimuli. In one part of the study, psychology students had to give an estimate on the perceived distance to each city; in another part, they had to imagine an important event taking place in each of the cities and to estimate their degree of emotional involvement in that event. It was found that the intensity of emotional involvement was inversely related to subjective distance. When the degree of knowledge and importance of the cities was kept constant, the relation could be described by the "inverse square root law,"

$$y = \frac{b}{\sqrt{d}} \quad [1]$$

where d is subjective geographic distance, y is the degree of emotional involvement, and b is a constant due to the arbitrary unit of measurement.

The "inverse square root law" was supported by three subsequent studies (1, 2, 4). In the first one Bratislava was used as the central point, in the second one Stockholm, and in the third one both Vienna and Stockholm. University students or high school graduates were used as subjects, and in all cases, the particular relation was obtained on the psychological level: i.e., when dealing with emotional involvement and subjective geographic distance.

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² Died 5 May, 1971.

Emotional involvement has also been related to distance in time with the use of names of historical periods and persons (3), and past and future years as stimuli (9, 15). Two mathematical functions were found to describe the relation between emotional involvement and subjective time distance, a power function with three constants and a simple exponential function. The exponential function was also supported in two studies with real events (14, 18). The importance of a psychological approach—i.e., to relate the psychological scales to each other without using intervening physical scales—was also supported by these studies.

The subjective scales used in the investigations mentioned above were obtained by using direct scaling methods (see 10). These methods were primarily worked out for problems of more limited character: e.g., for studying the relation between subjective magnitude and physically defined stimulus intensity. However, they are obviously well suited also for the study of more complex relations (see also 6, 27, 28).

The main purpose of the present report was to treat the data from eight investigations concerned with emotional involvement and subjective geographic distance in a single study in order to demonstrate further the general trend of the data and to test the "inverse square root law."

B. THE DATA

The data included in this report have earlier been presented in four separate papers (1, 2, 4, 8). As mentioned above, the relation between emotional involvement and subjective geographic distance was described by the "inverse square root law" (Equation 1) as suggested by Ekman and Bratfisch (8). These investigations were primarily concerned with determining the exponent of the distance/involvement function. The possibility of invariance was tested under different experimental conditions: different stimulus sets, different physical stimulus ranges, and different scaling methods. Furthermore, the investigations were carried out both with groups of subjects which were familiar with the scaling methods used and with groups which were not. Finally, the "inverse square root law" was validated from a cross-national view by investigations performed in different European countries.

The relation between emotional involvement and subjective distance was found to be influenced by "secondary variables," which therefore had to be kept constant. These "secondary variables" were the importance attributed to, the interest in, and the degree of knowledge about the cities.

The studies carried out so far are summarized in Table 1. It can be seen that about the same exponent was yielded in all investigations for the relation

TABLE 1
SUMMARY OF EXPERIMENTS ON THE RELATION EMOTIONAL INVOLVEMENT/SUBJECTIVE DISTANCE
AND SUBJECTIVE/OBJECTIVE DISTANCE

Study	Epicenter	Subjects	Number of subjects stimuli		Method	Range (km)	Exponent Involve- ment and sub- jective distance	Subjective and objective distance
Ekman & Bratfisch (8)	Stockholm	Students of psychology	46	10	Ratio estimation	522-6701	-.50	.78
Dornič (4)	Bratislava	University students	26	10	Free ratio estimation	470-12800	-.47	.70
Bratfisch (1)	Stockholm	Students of psychology	21	14	Ratio estimation	522-6701	-.49	.58
"	Stockholm	High school graduates	22	8	"	416-2288	-.50	.90
"	Stockholm	High school graduates and students of psychology	22	10	"	949-2402	-.53	1.08
Bratfisch & Lundberg (2)	Vienna	Students of psychology	24	23	Magnitude estimation	204-2848	-.49	.70
"	Stockholm	"	27	24	"	581-2127	-.46	.94
"	Stockholm	"	95	15	Ratio estimation	1056-6758	-.53	.62

between emotional involvement and subjective geographic distance. The mean of the eight exponents is $-.50$. Thus, the validity of the "inverse square root law" seems to be clearly demonstrated. However, the evidence would increase in strength if Equation 1 also describes the relation when the data from all studies are treated together.

A simple power function,

$$d = a D^n, \quad [2]$$

was used to describe the relation between subjective (d) and objective geographic distance (D). The exponents of this power function are also shown in Table 1. It can be seen that they show a considerable variation, and that the numerical values of the exponents do not change as systematically with the stimulus range as they have been found to do in investigations with real physical stimulation (22, 29, 30). The scatter around the curves fitted to the data for this relation was in all cases quite large. This scatter disappeared almost entirely when emotional involvement was related to subjective distance.

The scale values obtained in the eight investigations presented in Table 1 were transformed to a common scale of measurement. For the six investigations carried out in Stockholm, this was done by plotting the scale values for common stimuli for one investigation against each of the other five, fitting a straight line to the points and using the slope of the line as the transformation constant. For the investigations carried out in Bratislava and Vienna, the scale values were linearly transformed in order to obtain similar scale values for stimulus cities, which were located at about the same physical distance from the epicenter of each study. However, only stimulus cities which did not deviate too much from the fitted function were used for this purpose. The reason for the latter restriction is that if the scale values of one stimulus city deviate considerably from the fitted function in a certain investigation and were this stimulus to be used for the transformation of all the scale values of that study, this would result in a systematic deviation of these data when they are treated together with the data of the other studies.

C. RESULTS

Emotional involvement is plotted against subjective distance in Figure 1. The "inverse square root law" (Equation 1) was fitted as a straight line with the slope of $-.50$ to the log data and is represented by the curve drawn in the diagram. A small but systematic deviation from the "inverse square root law" can be noticed in the diagram. This deviation may be important from a

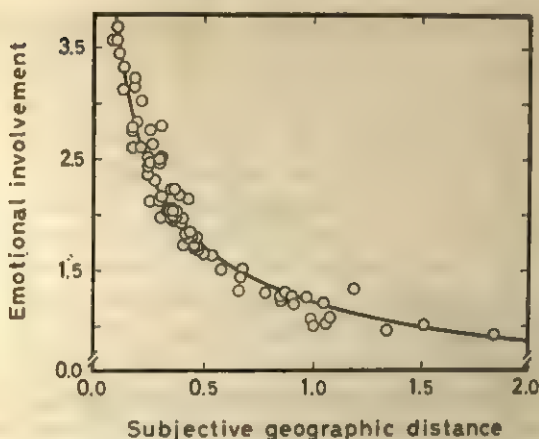


FIGURE 1
EMOTIONAL INVOLVEMENT PLOTTED AS A FUNCTION OF
SUBJECTIVE GEOGRAPHIC DISTANCE

A straight line with the slope of $-.50$ has been fitted to the log data, which corresponds to the "inverse square root law" (Equation 1) represented by the curve drawn in the diagram.

theoretical point of view, but for data description at present, it may be regarded as negligible.

The clear and simple trend in the data is greatly obscured if emotional involvement is related to geographic distance. The great scatter in the data for this particular relation could easily be predicted from the relation between subjective and objective geographic distance as shown in Figure 2. The curve drawn in the diagram represents a power function (Equation 2) with an exponent of $.64$. This function was fitted as a straight line to the log data by the method of least squares.

D. DISCUSSION

The "inverse square root law" has been found to describe the relation between emotional involvement and subjective geographic distance under different experimental conditions in a number of previous studies. In the present investigation, the data from these studies were treated together and the trend of the data was clearly brought out. However, what might look like a random deviation from the general trend in the data when using a small number of stimuli, may, when many data are available, turn out to be a systematic deviation. In our case there is such a tendency towards a small but

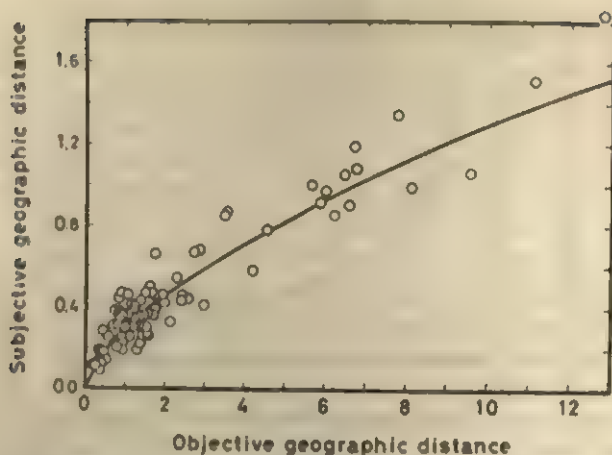


FIGURE 2

SUBJECTIVE DISTANCE PLOTTED AS A FUNCTION OF OBJECTIVE GEOGRAPHIC DISTANCE
(THE UNIT BEING 1000 KM)

A straight line with the slope of .64 has been fitted to the log data, which corresponds to a power function (Equation 2) with an exponent of .64 represented by the curve drawn in the diagram.

systematic deviation from the "inverse square root law." It ought to be pointed out that this particular mathematical function has not yet been given any psychological interpretation, and it is possible that other functions may also fit the trend of the data just as well or even better.

The clear and simple trend in the data was greatly obscured when subjective distance was related to objective geographic distance. The relation between emotional involvement and objective geographic distance was also more scattered than the intrapsychological relation. These findings are in agreement with the view emphasized by Ekman (5, 7), that psychological problems should be investigated on the proper—i.e., the psychological—level.

An attempt by Stanley (24) to verify the relation between emotional involvement and subjective geographic distance with Armidale, Australia, as the central point was not successful. Lundberg and Ekman (14) have suggested that the reason for this might be due to the instruction used by Stanley. He instructed his subjects to estimate the geographic distances as the crow flies, a rather physicalistic approach, while a more psychological approach was used in our laboratories: i.e. the subjects were instructed to give their estimates on an "immediate and unsophisticated basis."

In a recent study carried out in Melbourne, Stanley (25) asked one group of subjects to estimate the *subjective* distance to the cities and another to estimate the *physical* distance. The subjective approach, which was most similar to ours, yielded an inverse relation between emotional involvement and distance, which was more in line with the results presented above (Table 1), than was obtained by using the estimated physical distance. However, none of the exponents he found was higher than $-.456$ and, thus, does not confirm the "inverse square root law." It is possible that the difference, which still exists between Stanley's results and those described in the present report, is connected with the geographical location of Australia. It may have caused a different spacing of the stimuli concerning subjective distance than was the case for the European studies. It is also possible that minor differences in instructions and experimental conditions have contributed to a variation in the exponents which also occurred in the investigations summarized in Table 1.

Subjective geographic distance has also been studied by other researchers with different aims. Olsson (19, 20, 21) has shown how human migration is related to distance. Gould (11, 12) and Gould and White (13) have pointed out the importance of mental maps on people's behavior. Stapf (26) has found a linear relation between subjective and objective geographic distance. Subjective geographic distances have also been investigated by multidimensional scaling methods and reported by Lundberg and Ekman (17).

The particular inverse relation between emotional involvement and subjective geographic distance is quite clearly demonstrated by now, at least for European subjects. What remains to be investigated in this context are problems such as (a) which variables influence the relation, and (b) what changes are desirable from various points of view? The first question has been touched upon in a study where the political attitude and the place of residence of the subjects were investigated (16). Another variable which is probably of importance in this context is the amount of information that reaches an individual about a certain event (*cf.* 23). The second question has not been focused on yet. However, it is not a matter for psychology only, but is connected also to medical, political, and moral problems.

E. SUMMARY

Data from eight previous investigations, in which the relation between emotional involvement and subjective geographic distance could be described by the "inverse square root law," were treated together in the present study. It was found that the combined data formed a clear and simple trend which

also was described by the "inverse square root law." However, a small but systematic deviation from the fitted function could be observed. The relation between emotional involvement and objective geographic distance, as well as the relation between subjective and objective geographic distance, showed a large scatter in the data around the fitted functions. The results were interpreted as an illustration of the importance of investigating psychological phenomena on the proper—i.e. the psychological—level.

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Psychological Laboratories

University of Stockholm

Box 6706

S-113 86 Stockholm, Sweden



A CROSS-CULTURAL STUDY OF EIDETIC IMAGERY AMONG AUSTRALIAN ABORIGINAL CHILDREN*

University of New England, Armidale, Australia

PETER W. SHEEHAN AND SHELLEY J. STEWART¹

A. INTRODUCTION

The literature on eidetic imagery (EI) has consistently reported a low incidence of this particular form of imagery among the people of Western societies (7, 8, 13) and variable incidence among the people of cultures with a relatively high degree of illiteracy or low contact with civilization. Prevalence of EI has been indicated in some non-Western cultural groups—the Ibo and Kamba of Africa (4), the Hutu of Rwanda (5), and the Bororo of Brazil (9), for example—but not in others—the Masai and Somali of Africa (4) and schoolchildren in Ghana (6). This study extends the investigation of EI across cultures in search of this phenomenon and analyzes the occurrence of such imagery in three different groups of Australian Aborigines varying in their level of contact with European civilization. The groups chosen are the first samples of Aborigines to be investigated for incidence of eidetic imagery.

Past evidence has shown that Aboriginal culture, where tribal life and customs remain strong, is deficient in transmitting the symbolic skills necessary for classificatory and logical performance (1, 2) and is a society much more dependent than European culture on the development of visual skills and representations (10, 11). Accordingly, it was hypothesized that EI considered as a relatively primitive mode of iconic functioning would be more prevalent among Aboriginal children who have little contact with the environmental influences of European society than among Aboriginal children who have high contact. Memory imagery (MI) was studied in the same groups as were tested for EI in order to help isolate some of the distinguishing features of the latter form of imagery.

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B. SUBJECT SAMPLES

Three independent groups of Aboriginal children in the age range 8-12 yrs. were tested. Group I (high contact) comprised 20 Aboriginal children attending mixed racial schools in the densely populated town of Armidale in North Eastern New South Wales. All Ss in this group lived among members of the town's predominantly European community. Group II (medium contact) comprised 20 children attending the same schools but who lived together on an Aboriginal reserve geographically situated at the edge of the town's boundary. Group III (low contact) comprised 20 children attending school on Bamyili Aboriginal Reserve which is a tribally oriented government settlement situated close to Arnhem Land in Northern Central Australia, the nearest centre of European population being Katherine 48 miles away. The Ss in Groups I and II were all of less than full blood Aboriginal descent, whereas Ss in Group III were of full blood Aboriginal ancestry. Among the children tested, Group III was obviously the least acculturated Aboriginal sample, but some differentiation also existed between Groups I and II. Demographic data on "assimilation to European society" gathered at the time of testing indicated that the two Armidale groups differed significantly ($p < .01$) both with respect to reported frequency with which they visited and were visited by European children and the degree to which they associated with organizations to which white children belonged.

An additional group of children was tested. The Ss in this group were 20 white children of European descent, aged between 8 and 12 years, who lived within the community of Armidale and who attended the same schools as did the Aboriginal children. The mean age for this group was 10.1 yrs. The mean age for Groups I, II, and III was 10, 9.8, and 10 years, respectively.

C. METHOD

All Ss were tested first for EI and then for MI on each of two stimuli described below. Before testing began *E* demonstrated negative after-images so as to illustrate to Ss the nature of an image appearing externally (the most salient feature of EI) and gave Ss practice at summoning up "pictures in their head" of familiar objects in order to illustrate to them the nature of memory imagery. For half the Ss the demonstration of after-imagery was followed by the demonstration of memory imagery and for the other half of the S sample the order of the two demonstrations was reversed. Two stimuli were selected for formal imagery testing. Stimulus I was a 8 inch \times 8 inch black and white design consisting of 16 squares each illustrating a concrete,

meaningful object (e.g., tree, house, door, apple). Stimulus II was a 10 inch \times 8 inch structured colored picture depicting a man (not Aboriginal) standing beside a detailed display of common objects (e.g., knives, cups, bowls etc). Only two stimuli were used because of the limited attention span of children in this age range and the order of the two stimuli was alternated for *Ss* in all four groups.

The basic testing situation was the same for all *Ss*. The *S* was brought into a room containing two chairs, a desk or table, and a metal easel. The *S* was seated 20 inches away from the front of the easel, and *E* sat facing *S* so that he could unobtrusively observe the presence of eye movements. The edge of the easel supported a 15 inch \times 17 inch cardboard screen available for after-image projection. Rapport was established before *E* attempted any imagery demonstration. After-imagery was illustrated exactly according to the procedures of Haber and Haber (7). For memory imagery demonstration, *E* asked *S* to shut his eyes, pretend he was having a dream, and to try and see a picture in his head of his teacher. Each *S* was allowed 30 seconds to summon up MI and, as with the demonstration of after-imagery, procedures were repeated with varying stimuli until *S* reported an appropriate image of some kind. Formal testing was then commenced.

The *E* placed the first stimulus picture on the easel and *S* inspected it for 30 seconds, after which time it was removed and replaced with a blank stimulus sheet identical in size to the inspection stimulus. For both EI and MI inquiry, all *Ss* were tested for confidence, controllability, accuracy, and the vividness of their imagery in that order. At various points throughout EI and MI testing, *S* was questioned as to whether or not he still had an image. If at any stage he indicated his image had faded and he was unable to regain it, he was instructed immediately to try and remember the image that had been aroused and testing was continued from memory.

In the EI phase of testing after *S* had observed the stimulus, he was asked to look at the blank projection sheet (the sheet was partitioned into 16 blank squares for testing with Stimulus I) and report what he saw. If an image was reported and located externally, *E* noted the presence of eye scanning behavior, *S*'s use of the present tense in the description of his image, and *S*'s report of positive color in the image aroused by the stimulus. The *S* was then asked to indicate to *E* what object he saw in one of the two bottom corners of the image he was observing. Regardless of whether or not the response was correct, *S* rated how confident he was about this element being present on a simple three-point scale (very, fairly, not confident at all). Next, controllability of imagery was measured by asking *S* to try and move that same stimulus ele-

ment up to the top hand corner of his image. The *S* indicated that he could (control) or could not (no control) do this. Accuracy was then tested by *E* presenting *S* with five (three "correct" and two "incorrect") 2 inch \times 2 inch cards placed at the edge of the easel and asking him to indicate if the particular element illustrated on the card was contained within his image (this measured content accuracy). If *S* acknowledged the element was in the image he was then asked to point to where it was on the blank projection sheet (this measured location accuracy). Finally, the *S* rated the clarity and brightness of his image on a three-point vividness scale (very, fairly, not bright at all).

After EI questioning, *S* was immediately tested for MI on the same stimulus. The *E* instructed *S* to shut his eyes and try to image again—this time "in your head"—the picture he had seen previously. The same procedures were repeated for the measuring of confidence and controllability. For accuracy testing, different stimulus elements were selected and since *S*'s eyes were closed throughout, all elements of the stimulus and their position were indicated verbally. EI and MI procedures were then instituted for the second stimulus. These duplicated exactly the procedures adopted for the preceding stimulus. Following testing with both stimuli *E* collected demographic data on the samples and conducted a short inquiry into *Ss*' everyday experiences of mental imagery. Imagery inquiry probed specifically into the frequency of occurrence and content of images of either an eidetic or memory kind. The inquiry, as also imagery testing and demonstration, was conducted in English for the four groups being investigated.

D. RESULTS

1. Incidence

a. EI. Because of the difficulty some of the Aboriginal children had in fluently describing their images to *E* thus making judgments about tense and image color at times ambiguous, the criteria selected for the presence of EI in this study emphasized: (*a*) the reported presence of an image, (*b*) its external location, (*c*) appropriate scanning behavior, and (*d*) lengthy duration (the image lasting throughout the EI testing procedures).

The population of *Ss* tested was divided into those showing *ALL EI*, *SOME EI*, and *NO EI*. The *Ss* in the first category reported images to both stimuli which satisfied the above listed criteria. *SOME EI Ss* were distinguished from *ALL EI Ss* by the fact that their images to one or both of the stimuli failed to last the full duration of the eidetic testing procedures (ranging across *Ss* from 3.5 to 6 minutes for the presented stimulus). The

NO EI category included all *Ss* showing no evidence of an outwardly projected, scanned image. Table 1 reports the incidence of *EI* among the groups tested and lists findings from other studies (using comparable categories) to facilitate cross-cultural comparison.

TABLE 1
PERCENTAGE OCCURRENCE IN *EI* CATEGORIES

Sample	ALL	SOME	NO	N
Present study				
European children	5 (<i>N</i> = 1)	10 (<i>N</i> = 2)	85	20
Group I (high contact Aborigines)	5 (<i>N</i> = 1)	5 (<i>N</i> = 1)	90	20
Group II (medium contact Aborigines)	0	5 (<i>N</i> = 1)	95	20
Group III (low contact Aborigines)	15 (<i>N</i> = 3)	35 (<i>N</i> = 7)	50	20
Other samples				
West Australian European children (13) ^a	5	7	88	61
African cultures				
Ibo children (4)	29	47	24	17
Kamba children (3, 4)	10	18	71	48
Somali children (4)	0	6	94	16

^a These figures were arrived at by reclassifying Richardson and Cant's data to accord with the criteria adopted for the categories used in the present study.

Table 1 shows the highest incidence of *EI* in the least acculturated group of Aboriginal children. Categorizing *Ss* into those showing all or some *EI* *versus* those showing no *EI* at all, chi square analyses of data from the three Aboriginal groups showed significant differences among the Aboriginal children in the rate of *EI* occurrence ($\chi^2 = 14.34$, *df* = 2, $p < .001$). Individual analyses showed a statistically greater incidence of *EI* in the Group III sample as compared to both Groups I ($p < .02$) and II ($p < .01$) and the sample of white children ($p < .05$). Comparison with data gathered from other cultures as represented in Table 1 shows quite similar incidence of *EI* for the two Aboriginal groups who were substantially in contact with European society and the West Australian sample of European (acculturated) children; data here are also comparable to findings elsewhere for samples of children tested in the US (7, 8). Results for the low contact Group III were much more comparable to those found for the African cultures. It should not be inferred, however, that incidence of *EI* was consistently the same across these cultures. The Bamyili (Group III), as did the Ibo and Kamba, showed, for example, an appreciably greater incidence of *EI* than the nomadic Somalis.

b. *MI*. The *Ss* were also classified into the categories *ALL MI*, *SOME*

MI, and *NO MI*. The first category included all *Ss* who reported images in their head (not external) to both stimuli and which lasted for the duration of the *MI* testing procedures. *SOME MI* *Ss* reported images to one or both of the stimuli which failed to last the duration of testing, and the *NO MI* category included all *Ss* who showed no evidence of any memory imagery to either stimulus. Analyses of results showed no significant differences among groups with respect to incidence of *MI*. More than 74% of the *Ss* in all four of the samples of children tested reported at least some traces of *MI*.

2. Attribute Data

Subjects were classified into two groups, "high" and "low," on the dimensions of confidence, controllability, accuracy and vividness. Any *S* scoring more than 2 on the three-point scales of confidence and vividness was classified as "high" on these dimensions. Controllability was indicated if *S* reported being able to move the stimulus element of his image from one corner of it to the other. High content accuracy was indicated by *S* being correct on three or more items on the five-item test of accuracy. While the limitation of sample size was recognized for the *Ss* in the study who showed traces of *EI*, there was some evidence that scores on these dimensions of imagery were related obviously to occurrence of *EI*, but not to the occurrence of *MI*.

Two of the three Bamyili *Ss* classified as showing *ALL EI* were highly confident about their imagery to both stimuli. All three reported being unable to control parts of their projected image and were able to accurately image content (but not location) of detailed elements in the original stimulus. Two of the three Bamyili eidetikers indicated high vividness ratings on both stimuli. For images to both stimuli, the single eidetiker in Groups I and II was also confident, accurate in content (but not location), and reported vivid imagery but indicated being able to control elements in both of the images. Analyses of results for *MI* testing showed no significant differences across stimuli among the three Aboriginal groups and no consistent differences between Aboriginal and white children living in the same community on any of the dimensions of imagery that were measured. Before the notion is rejected, however, that the memory imagery attribute data completely failed to differentiate low contact Aborigines from *Ss* in the other groups, it should be noted that when the two most contrasting groups of Aboriginal children were compared (Armidale town and Bamyili reserve *Ss*), the low contact Bamyili children showed the greater experience of memory imagery (in the direction of more confident, controllable, accurate, and vivid imagery) in all but one of the eight imagery comparisons made.

3. *Data from Postexperimental Inquiry into Everyday Experiences of Imagery*

Only 56% of those *Ss* who indicated some EI in the experimental setting reported previous experiences of an eidetic kind and only two of the accounts offered by *Ss* convinced *E* that eidetic imagery had been truly reported. In sharp contrast to the EI inquiry data, 96% of *Ss* reported having had some prior experience of memory images and in each of the four groups a majority of *Ss* classified as having previously experienced MI indicated that they encountered such images most frequently when they were asleep at night. Data are somewhat consistent with evidence found elsewhere (3) that relatively unsophisticated samples of *Ss* find some difficulty in relating EI experiences that have occurred outside the experimental context, while these same *Ss* typically report a consistently high rate of incidence for experiences of memory imagery both in and away from the formal test setting.

E. DISCUSSION

The hypothesis under test gained some support from the high incidence of EI found in the most tribally oriented of the three Aboriginal groups, the Bamyili reserve *Ss*, and results for MI testing highlighted some of the distinctive features of the EI shown. Consistent with previous evidence (4, 7, 14) there were no substantial indications that accurate recall specifically characterized EI. Only half of the eidetiker *Ss* in the study (those showing *ALL EI*) were able to accurately locate specifiable elements within the images that they were projecting. The subjective attribute data discriminated much more the least acculturated *Ss* from children in the other groups.

All three eidetikers in the Bamyili sample were unable to vary the position of the elements in their imagery. This finding contrasted markedly with results for the same group on MI testing where Bamyili *Ss* showed the highest (but not significantly so) control of all *Ss* tested for memory imagery to both stimuli. Richardson (12) argues that, among other things, EI can be distinguished from MI by the fact that it is less subject to voluntary control. The fact that the phenomenal attribute of controllability here distinguished one form of imagery from another in the same sample of *Ss* suggests two conclusions. First, data appear to index the special distinctiveness of eidetic imagery as shown by the low contact Aboriginal children who were relatively unacculturated to European society; and second, variability across imagery testings in the same group of children suggests that EI results are not just due to any demand characteristics concerning control that may have been

communicated to *Ss* by the nature of *E*'s test procedures. This same lack of control for EI has been observed elsewhere in Western societies (8). Results, then, appear to offer additional support for Doob's major conclusion (4) that the ability to experience EI, where it does emerge, transcends culture and manifests itself in quite uniform fashion.²

By the very nature of their existence on a relatively isolated reserve in the Northern Territory of Australia, Bamyili children could be expected to be more deficient than the Aboriginal children in the Armidale samples in their experience of the abstract, symbolic modes of cognitive functioning typically prevalent in Western societies; data gathered elsewhere support such an inference (1, 2). The close dependence of the culture on nonverbal modes of representation would also serve to reinforce the maintenance of certain concrete modes of cognitive functioning; visual representations, particularly the intense involvement with communication by mime, permeate the thought and behavior of the society. It seems, then, that inadequate transmission of particular abstract modes of functioning, and enhanced imagery experience integral to the beliefs and practices of the culture both offer possible explanations of the data. And the two factors may be operating singly or in concert.

The differences in imagery performance between *Ss* in the unacculturated Aboriginal sample and *Ss* in the remaining groups do not unequivocally indicate that "degree of contact with white Australian society" is the reason for the obtained discrepancies. Other variables differentiated groups also, and equally may be designated as causal. Aboriginal groups, for example, differed both in level of formal education (Armidale children experience a higher level of schooling) and incidence of eye defects (eye problems frequently appear on the Bamyili reserve). The latter fact is particularly suggestive. Siipola and Hayden (14) showed that EI was strikingly prevalent among a sample of brain-damaged retarded children. It is significant to note in this context that the only brain-damaged eidetiker found by Richardson and Cant in their study (13) among white Australian children had an eye defect, and one of the very few significant results to emerge from Leask, Haber, and

² One aspect of the data demonstrated a certain lack of uniformity with previous findings. Those *Ss* in the study who showed any evidence of EI were tested on one of the objective tests of eidetic imagery discussed and used by Stromeyer and Psotka (15). Results for their test (a random-dot stereogram) were inconclusive and hence the test has been excluded from detailed consideration. Data for the test showed strong support for the contention that *Ss* were, in fact, able to detect new configurations when asked to superimpose their images of one pattern of dots on another pattern, but no *S* among all those tested actually reported the response that was "correct" for the particular figures being used. Nowhere, then, for the samples of children tested here, did the evidence replicate the nature of the responses observed previously in Stromeyer and Psotka's remarkable subject.

Haber's study (8) was the appreciably larger number of eye problems occurring among their eidetic (as compared to noneidetic) children. It may be as these authors (8) suggest that the prevalence of EI among some Ss reflects the presence of a central disorder in the visual system, EI being a symptom of brain pathology. Further work, however, needs to explore the hypothesis that although brain injury appears to be a sufficient condition for the occurrence of EI in some Ss, cultural data from different societies having low contact with Western civilization indicates it is not, in fact, a necessary one.

F. SUMMARY

It was predicted in this study that as groups of Aboriginal children move further apart from each other in sophistication and pattern of cultural similarity to European society, then differences in experiences of eidetic imagery will become more apparent. Results partially supported the hypothesis, data indicating the strongest EI functioning among Ss in the least acculturated group. EI function contrasted with memory imagery function; the latter kind of imagery failed to differentiate groups appreciably in any consistent fashion.

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Department of Psychology
The University of New England
Armidale, N.S.W., Australia

HOPI INITIATION RITES—A CASE STUDY OF THE VALIDITY OF THE FREUDIAN THEORY OF CULTURE*¹

California State College, Los Angeles

GARY GRANZBERG

A. INTRODUCTION

Freudian theory assumes that culture serves the needs of individuals (12, p. 394). Symbolic interaction theory, on the other hand, maintains that culture serves the needs of groups (12, pp. 390-391; 13, p. 24). John Whiting (2, 11) and Frank Young (12, 13) sought to weigh the relative merits of these two differing conceptions of culture by showing that the two conceptions lead to differing analyses of initiation rites and differing hypotheses about initiation which can be tested through a study of cross-cultural initiation data. Whiting and Young's attempt to use initiation data to weigh the validity of the Freudian and symbolic interaction theories of culture, however, was undermined by the fact that the cross-cultural initiation data were so incomplete that only a portion of the analysis of initiation of each theory could be tested. Because of this, Whiting and Young could not reach any definitive conclusion about the relative merits of the Freudian and symbolic interaction approaches to initiation.

This paper throws some new light on the problem of the validity of the Freudian and symbolic interaction approaches to initiation by presenting a case study of Hopi initiation, which tests a key portion of Whiting's Freudian analysis of initiation that could not be tested cross-culturally. This is Whiting's assertion, following directly from the Freudian assumption that culture serves the needs of individuals, that initiation rites help initiates adjust to their society by "brainwashing" problem behavior which is causing them to come into conflict with their systems. The case study here reported shows that Hopi initiation alters the behavior of initiates in exactly the way

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¹ This study is based on a dissertation submitted to Harvard University in partial fulfillment of the requirement for the Ph.D. degree. Further detailed information, especially as regards personality measuring instruments, is available in the dissertation. The author is greatly indebted to John Whiting for his guidance and assistance.

Whiting's theory predicts—thus providing construct evidence of the validity of Freudian theory.

B. METHOD

1. *Subjects and Design*

In order to test Whiting's hypothesis that, as a result of initiation, initiates undergo a change from disruptive behavior to nondisruptive behavior, a group of Hopi boys between eight and 10 years of age who were to be initiated were given a battery of psychological tests before and after their initiation. At the same time the same battery of tests was given to a control group of boys who did not undergo initiation during the study but who were similar to the experimental group with respect to age, grade, school, village and acculturation level.

The children included in the study were from the Hopi second mesa day school. All the boys at that school who were to be initiated during our stay in Hopiland were tested as the experimental group. There were 11 in this group. All their same age schoolmates who were not to undergo initiation formed the control group. There were six in this group. The children who were initiated during the study were not selected for initiation because of any special personal attribute that distinguished them from the children who remained uninitiated during the study. It was simply that these children were from a second mesa village that had enough uninitiated children of proper age to warrant holding an initiation ceremony, while the children who remained uninitiated were from second mesa villages that did not have enough uninitiated children of proper age to warrant holding the ceremony. These latter children would receive their initiation when more children of the proper age became available in their villages.

The tests were administered in three time periods. The first period of testing occurred two months before initiation, the second immediately after initiation, and the third two months after initiation.

2. *Materials*

A review of literature on the Hopi (1, 3, 4, 8, 10) coupled with our own observations of the Hopi revealed that too much independence and excessive aggression were the behavior patterns that caused preinitiation boys the most adjustment problems and were the behavior patterns most likely to be altered by initiation. Measurement of the levels of dependence and aggression among Hopi boys before and after initiation was accomplished by assessing the boys'

performance in three areas—tasks, verbal thematic apperception tests, and pictorial thematic apperception tests.

There were four tasks. The first required that the boys figure out how to use a complicated portable pencil sharpener. The second required them to put together a disassembled slide viewer. The third and fourth tasks required the boys to fit variously shaped cardboard pieces together into a square.

The standard Murray TATs (6) were not considered appropriate for the Hopi boys because they would be unfamiliar with the situations depicted. Instead the author chose to describe verbally a series of situations that were familiar to the Hopi and to utilize several drawings, mainly from the National Geographic, which depicted aspects of Hopi life. The situations verbally described depicted a Hopi child in a predicament which could be solved by utilizing several forms of behavior, including dependent behavior or aggressive behavior: for example, a boy is helping his father in the fields and must climb over a tall fence; a boy gets a gift which is difficult to put together; a boy is called a bad name by a school mate. The drawings depicted the following situations: a man running in the fields with threatening clouds overhead; a woman and two children huddled together in a doorway; a little girl crying; and, a woman carrying corn and being confronted by two adults while a young boy is holding onto her skirts.

3. Procedure

The testing took place at the second mesa day school during school hours. Before administering the tests, the researcher spent several months visiting the school practically every day and playing with the children during recess, attending their classes, and, on occasion, assisting teachers. Each student was tested individually in the teacher's lounge. Each student was taken from class or sent by the teacher and then told to make himself comfortable in one of the easy chairs. The researcher then spent a few minutes talking to the subject and putting him at ease. During the initial "calming" period, information was gathered about the subject's family, his siblings at school, and other things that were congenial and easy to answer. Then the tests were explained and administered.

The tasks were administered first. The subjects were given the following instructions after each task was explained. "You may ask me for help anytime you wish. Just say 'help me' and I will." A timer was used to determine the length of time that transpired before help was requested. If a subject went two minutes without asking for help, he was shown the solution and then given the next task.

After subjects completed the tasks, they were given the verbal TATs. Eight situations were described and after each the subjects were asked to describe what would happen next or what the person was going to do. The pictorial TATs were the last to be administered. They were laid before the subjects on a table, and subjects were asked to describe what was happening. On occasion subjects had to be prodded by asking a direct question, such as "Why is he running?"

The author scored the test responses blind in the following way: The tasks were scored for dependence by giving a subject a "D" if he voluntarily asked for help within two minutes or a "d" if he gave up on a task within two minutes. The TATs were scored for dependence according to Kagan's (5) and Murray's (6) systems. "D" is scored when hero seeks help or sympathy, or when he is disturbed over the loss of a source of love or support, or when the hero complies with the wishes of a dominant object, or expresses admiration and respect. A "d" is scored when hero is given a gift or help that is not specifically requested. A "p" is added to the score if a dependent act is potential or implied rather than actual. The TATs were scored for aggression according to Stone's system (9). A "D" is scored for death concepts, a "P" for physical aggression, a "V" for verbal aggression, and a "p" is added for aggressive acts which are potential rather than actual. A reliability check by an independent judge on half of the test responses showed 90% agreement with the author's scoring of the responses.

C. RESULTS

The dependence scores were translated into numbers in the following way: $D = 4$, $d = 2$, $p = \frac{1}{2}$ original value; absence of D or d = 0. The values of aggression scores were: $D = 6$, $P = 4$, $V = 2$, $p = \frac{1}{2}$ original value; absence of C, P, or V = 0. A subject's total dependence score for a given test period was the average of his dependence scores on each item. The total aggressive score for each subject was obtained in a similar way. It was the average aggressive response to each item.

The data used to check the Freudian based hypothesis that initiation reduces problem behavior in initiates were mean change scores: i.e., the mean difference between subjects' aggression and dependence scores on the initial tests and the tests administered immediately after initiation, and the mean difference between subjects' aggression and dependence on the initial tests and the tests administered two months after initiation. Students' t test was used to evaluate these differences. The data on kurtosis and skewness indicated that this was a proper statistic (7).

The t tests demonstrated that the newly initiated subjects forming the experimental group showed a significantly greater change toward less aggression and more dependence after initiation than their uninitiated counterparts in the control group. This finding is illustrated in Table 1. Table 1 demonstrates that in a period beginning two months prior to initiation and ending immediately after initiation children who were initiated showed a significantly greater lessening of aggression than children who remained uninitiated ($t = 2.87$, $df = 15$, $p < .01$). During this period, however, the change in dependence of initiated and uninitiated children did not significantly differ. Table 1 also demonstrates that two months after initiation children who had been

TABLE 1
MEAN CHANGES IN AGGRESSION AND DEPENDENCE SCORES OF NEWLY
INITIATED AND UNINITIATED BOYS

Scores	Newly initiated boys ($N = 11$)	Uninitiated boys ($N = 6$)
	<i>Over a period beginning two months prior to initiation and ending immediately after</i>	
Aggression	-.51	+ .55
Dependence	+ .20	+ .16
	<i>Over a four-month period beginning two months prior to initiation and ending two months after</i>	
Aggression	+ .29	+1.08
Dependence	+ .75	- .39

Note: Positive scores indicate an increase in aggression and dependence after initiation; negative scores indicate a decrease in aggression and dependence after initiation.

initiated continued to show aggression scores that indicated that they underwent a significantly greater shift toward less aggression after initiation than children who remained uninitiated ($t = 1.91$, $df = 15$, $p < .05$). Table 1 also shows that after four months a significantly greater shift toward dependence was manifest among the newly initiated as compared to the uninitiated ($t = 2.98$, $df = 15$, $p < .005$).

D. DISCUSSION

This study, in demonstrating that Hopi initiation reduces the aggression of initiates and, in a delayed way, increases their dependence, supports the work of Hopi ethnographers and statements by the Hopi themselves (1, pp. 25, 32, 36; 3, pp. 181 & 173; 4, pp. 261-266; 8; 10, p. 54) which detail the way disruptive aggression, impulsiveness, and independence in uninitiated children is eradicated by initiation and turned into compliance, conformity, and

obedience. In so doing, these findings support Whiting's Freudian hypothesis that initiation rites serve to alter and "brainwash" disruptive behavior among initiates and thus serve as an illustration of the validity of the Freudian conception of culture as a tool which helps man adjust to a society with which he is in conflict.

If the Hopi study is evidence of the validity of Freudian theory, it should not be interpreted as a renunciation of symbolic-interaction theory. The two theories, it is believed, are compatible and mutually supportive. Young's symbolic interactionist interpretation of initiation as an institution in the service of groups points out the role of initiation rites in promoting the solidarity of secret societies. Whiting's Freudian analysis of initiation as an institution in the service of individuals points out the role of the rites in helping initiates overcome disruptive, problem behavior. While this study demonstrates that Hopi initiation helps individuals overcome personal problems of adjustment, it doesn't thereby deny the possibility, in fact the probability, that the rite also helps Hopi secret societies maintain their solidarity. The increase of dependence and the decrease of aggression manifest by the newly initiated children in the study help promote the solidarity of the secret societies which they have joined and, at the same time, aid each of them to overcome deviant problem behavior and to better adjust to society.

A group of people forming a society must deal both with the needs of individuals and with the needs of groups, and it does not seem unreasonable to assume that they will utilize an aspect of culture at times to deal with individual needs, at other times to deal with group needs, and at still other times to deal with both kinds of needs simultaneously.

E. SUMMARY

This in-depth study of Hopi initiation rites supplements inconclusive work by John Whiting and Frank Young which sought to discover what cross-cultural initiation data reveal about the validity of the Freudian position on culture. The study shows that the Hopi rite "brainwashes" disruptive problem behavior in initiates. This finding is predicted by Whiting's Freudian interpretation of initiation and thus favors the conclusion that initiation data provide construct validity for the Freudian interpretation of culture.

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Department of Anthropology
California State College
5151 State College Drive
Los Angeles, California 90032

CONTENT ANALYSIS OF EGYPTIAN STORIES*¹

American University, Cairo, Egypt

JAMES A. BESHAI

A. INTRODUCTION

The cultural life of Egypt has gone through rapid social changes during the last five decades. Prior to the laws of 1923, education was restricted to a few who met the rigorous demands of government, private, and clerical schools. The laws of May-June 1953 extended free schooling to the secondary level, and reorganized the school system in a manner affording greater opportunity for free academic, vocational, and technical training. These laws brought about structural shifts not only in curricula but also in the needs and motives of the learners. While a few studies have explored certain aspects of these changes—e.g., Hudson (7), Melekian and Diab (13)—there is a scarcity of information on the subject.

Following the work of deCharms and Moeller (5) on American children's readers, this study applied similar content analysis procedures in assessing the magnitude of themes for achievement, affiliation, power, and moral teaching in Egyptian stories found in three periods of educational development: current readers of 1967, short stories of the middle fifties, and folk tales of the early twenties. These periods do not necessarily have historical validity as much as they match the educational reform laws of the country.

The need for achievement, according to McClelland (11) is part of a cluster of traits that define the entrepreneurial character often found in a modern industrialized society. In Egypt, prior to 1923, tradition placed a heavy emphasis on family solidarity, a rigid maintenance of birth order and father dominance. From such a background low emphasis on achievement themes may be expected.

The scoring criteria for affiliation, while slanted for the construct of

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prestigious fraternity membership, may still be used to test the hypothesis of strong affiliation needs in Arabic thought as suggested by Ammar (1) and Berger (3).

Middle East observers have differed in their views of the Egyptian's need for power. The cross-cultural research group (7) which reported in 1959 that both Moslems and Christians in Egypt scored significantly higher than Americans on the F scale modulated the implication of this finding in later publications. Gardner (6), for instance, cautioned against the naive assumption of equivalence of perceptions among cultural groups. If one considers Atkinson's (2) definition of power, the present study may provide some insight into structural changes in the power motive.

deCharms and Moeller (5, pp. 138) defined moral teaching as "explicit or implicit statements of judgments between right and wrong from the point of view of the author." In a study by Dahlberg and Stone (4) there were strong indications that Egyptian students scored significantly higher than matched American students on items of high verbal support of conventional morality, obligations, and ideal values, such as faithfulness, bravery, and honesty.

B. HYPOTHESES

1. Readers of the current period will have significantly more achievement imagery than short stories and folk tales of the middle and early periods.
2. The incidence of achievement imagery in all stories will be higher than that of power imagery but lower than those of affiliation and moral teaching.
3. The incidence of affiliation imagery in all stories will be higher than those of achievement and power, but lower than that of moral teaching.

C. METHOD

Twenty stories were obtained from the 1967 revised edition of Arabic readers currently used in Egypt for ages 8 through 12. The length of each story varied from 50 to 1000 words. Since stories with descriptions of historical events, essays, and religious texts comprised about two thirds of each reader, the entire remaining text in five readers comprised the sample of children's readers. The author made a literal translation of each story with a minimum of tampering with the Arabic expression. Although most stories used the standard name Sam for the main character, it was not possible to mask the identity of other persons, the country, and its culture without a total transformation of the material. The sample of short stories came from three anthologies by Johnson-Davies (8), Kritzeck (9), and Manzalaoui (10). Two printed pages from each of 20 stories were selected to comprise

the sample of short stories for the middle period. Thematic material for the early period—i.e., 1923—was obtained from 18 folk tales compiled by Ammar (1). The three sets of stories were randomly assigned code numbers from 1 to 58. The author (JB) and two American graduate assistants (PS and JS) studied the scoring system in the Atkinson Manual (2) and with varying learning speeds arrived at .72 (JB), .80 (PS) and .93 (JS) reliabilities with expert scorers. The three raters read all 58 stories and scored them independently. Rating of stories had to be conducted in English because two of the three raters (PS and JS) did not speak or write any Arabic. The final scoring sheet for each variable reported the averages of three scores on each story. Scorer reliabilities, based on presence of imagery only, were consistently high (achievement imagery = 94%, affiliation imagery = 96%, power imagery 92%, moral teaching 90%). Rank correlations based on the total score of each story, however, were considerably lower. On achievement imagery, rank correlations were as follows: (JB and JS) .58, (JB and PS) .72, (JS and PS) .43.

D. RESULTS

Results presented in Table 1 confirmed the first hypothesis. There was a significant increase in achievement imagery during the current educational period represented by children's readers ($t = 4.06, p < .001$). Although the difference between children's readers and folk tales was not significant ($t = 1.32, p < .10$), there was a significant increase in the percentage of stories with achievement imagery in the two sets ($\chi^2 = 17.64, p < .001$).

The first part of the second hypothesis was not confirmed. There were no significant differences between achievement and power imageries ($t = 1.31, p < .10$). Moral teaching scores were significantly higher than those of achievement ($t = 7.35, p < .001$), but the difference between affiliation and achievement scores was not significant even though it was in the predicted direction ($t = 1.16, p < .10$).

Results did not support the third hypothesis. Although the incidence of affiliation imagery was higher than that of achievement imagery, the difference was not statistically significant ($t = 1.16, p < .10$). Likewise, there were chance differences between mean scores of affiliation and power. Scores on moral teaching, however, were significantly higher than any of the other three variables.

E. DISCUSSION

While due recognition was given to the fact that there were cross-cultural limitations in the method used, themes of stories in current Egyptian readers

TABLE 1
MEAN, *SD*, AND FREQUENCY PERCENT FOR ACHIEVEMENT, AFFILIATION, POWER, AND
MORAL TEACHING ON THREE SETS OF EGYPTIAN STORIES

Story type	N	Achievement		Affiliation		Power		Moral teaching					
		Mean	SD	%	Mean	SD	%	Mean	SD	%			
Children's readers	20	1.50	1.28	70.0	1.00	1.68	35.0	.80	1.06	40.0	2.85	1.70	90.0
Short stories	20	.20	.70	10.0	.70	1.13	35.0	.70	1.34	30.0	2.50	1.90	80.0
Folk tales	18	.89	1.53	28.0	1.77	1.90	55.5	2.20	1.33	66.6	1.05	.96	60.0
Total	58	.86	1.30	36.2	1.14	1.61	41.4	1.20	1.45	44.8	2.55	1.16	79.3

appeared to be significantly different from those of previous periods in being saturated with a fusion of achievement and moral themes. Although this result was consistent with earlier findings by McClelland (11) and deCharms and Moeller (5), there were basic differences as well. The incidence of achievement imagery was significantly below incidences reported for the U.S. and some developing countries (11, p. 462). Furthermore, the quality of need for achievement in Egyptian stories with its heavy emphasis on tradition-maintenance, charity, and courage reflected a distinctively Moslem ethic of egalitarianism and success within the confines of group sanction and approval. It is interesting to note that whereas expert scorers in the Atkinson manual reported six cases of nurturing persons (Nup) in 210 stories, the present study reported the same number in 58 stories. Furthermore, unlike the results reported by deCharms and Moeller (5) where a decline in moral teaching was associated with a decline in achievement, the present study reflected a rise in moral teaching along with the rise in achievement imagery. It is possible to interpret these differences as concomitants of the differences in world outlooks between Christianity and Islam, as discussed by Gardner (6).

The disconfirmation of the second hypothesis was not consistent with the speculations of some Middle East experts (1, 3, 13). It is possible that affiliation imageries did occur in forms other than those articulated by the Atkinson Manual (2). Whereas the American criteria for affiliation were equally distributed between influence, persuasion, and convivial activity, those found in Egyptian stories tended to reside in descriptions of close family ties that were generally excluded from the present scoring manual. Triandis (14) suggested a follow-up study to explore the semantic aspects of "affiliation" by redefining it in a manner consistent with Egyptian culture, and conducting content analysis on two semantic levels in order to determine what was cultural difference and what was a matter of definition.

Results also showed that the need for power was not as manifest in children's readers as it was in folk tales where the increase in incidence of power imagery may have been due to the inclusion of the four adventures of Goha, the Egyptian equivalent of Hermes. Although neither a thief nor a profiteer, Goha was a trickster who had no scruples about retaliation, and used cunning to realize his ambitions. It is likely that in order to compensate for his cunning, the oral transmitter of the tale had to counteract the lack of scruples by excessive moralizing.

There were no significant differences between the incidence of power and affiliation imageries in the three sets of stories taken as a whole. Again, this was somewhat inconsistent with speculations of some political scientists, but

may well be an artifice stemming from the application of western criteria of power and affiliation needs to Arabic stories. An Egyptian social scientist might define power more in terms of overt than covert signs of bravery and courage, which were generally excluded from the Atkinson manual (2). Recent work by Winter (15) has developed an improved system of scoring for power motivation comprising two components: personalized power and socialized power. The latter appeared largely as nurturance, dependency, and a propensity to share freely of one's resources with others. This was a characteristic component of power motivation in Egyptian stories. McClelland (12) suggested that "much of Arab values has to be interpreted in terms of the notion of charity as a special expression of powerfulness."

The pervasiveness of moral teaching all along the stories of the past five decades raises some doubts about the thesis that developing countries are bound to replicate the stages of industrial development in the West. It is possible that the full impact of industrial development has not been expressed yet in thematic material, but the authors of current readers while trained in the West seemed more bound to an earlier and more conventional cultural tradition than they were concerned about the psychological prerequisite for industrial development.

F. SUMMARY

Content analysis of Egyptian stories selected from children's readers, short stories, and folk tales representing three periods of social change showed a significant rise in the achievement imagery of current children's readers. While this result was consistent with recent trends in developing countries, the simultaneous rise in themes of moral teaching, as well as the unexpectedly low incidence of affiliation and power imageries, might represent differences in world views between western and developing countries. A critical methodological problem was indicated by the apparent inconsistency between speculations made by political observers and present results. It was suggested that much of this inconsistency might be reduced if cross-cultural research was conducted on two semantic levels: one provided by western criteria, and another representing reformulation of these criteria by social scientists within the culture under study.

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Department of Psychological Services
Dixmont State Hospital
Sewickley, Pennsylvania 15143



THE EFFECT OF ANTICIPATING THE CONTINUATION OF ROLE PLAYING ON ATTITUDE CHANGE*

Brigham Young University

GARY G. TAYLOR AND KAY H. SMITH

A. INTRODUCTION

The present study was an attempt to examine variables related to incentive, cognitive dissonance, and public commitment theories for the effect of role playing on attitude change. Reviews of the literature concerning these theories have been made elsewhere: e.g., McGuire (7), Elms (4), and Linder, Cooper, and Wickland (6). It was felt that public commitment is an important variable in spite of its relative lack of support in the literature, and could be responsible for attitude change if Ss expected future contact with the observers of a role playing experience.

Two basic manipulations were used in a 2×2 analysis of covariance design. One half of the Ss were exposed to a positive pre-experimental situation and a pleasant E. The other half had a more negative preexperimental situation and were exposed to a critical and cold E. Half of the Ss were led to believe they would maintain their role-played orientation for one week. The remaining Ss were told their role play would terminate at the end of the experimental session. Nine Ss were used in each of the four conditions.

Information input to all Ss was controlled by requiring the same list of 10 pro and con arguments to be memorized by all Ss. A control group of nine Ss took both questionnaires, but were not exposed to the experimental treatments in order to get a measure of pre- and posttest reliability.

The following specific hypotheses were investigated in the study:

Hypothesis 1. More attitude change will be shown by Ss told they must maintain their role-played orientation beyond the experimental session than by Ss told they can explain the reason for their role-played statements immediately following the experiment.

Hypothesis 2. More attitude change will occur in the positive than in the negative condition.

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B. METHOD

1. *Sample*

Ss were females recruited from introductory psychology classes at Brigham Young University. Thirty-six Ss, nine in each condition, were selected on the basis of attitude scores in order to obtain a sample homogeneous in attitude toward the relevant issue.

2. *Materials*

Following Osgood (8), the pre- and postexperimental attitude measure was a variant of the semantic differential scale with both potency and activity dimensions, as well as an evaluative dimension. A list of five pro and five con arguments was provided for each S.

3. *Procedure*

The issue was enforced dress standards at Brigham Young University. This topic had received considerable comment informally and in the school newspaper. It was felt that this issue would be highly relevant for the proposed Ss.

The *E* giving the initial questionnaire (administered four to five weeks in advance) was female and was made to appear to have no relationship to the two male *Es* who conducted the experiment proper. Scores on the initial four critical items ranged from 8 to 52. Those with scores between 10 and 16 were selected as Ss.

Two *Es* and eight accomplices were used. *E*₁ welcomed all Ss to the experiment and worked with Ss in the pleasant condition. A pair of accomplices was used with from four to six Ss. Accomplices were instructed to take a given stand toward dress standards. In each case, the stand taken by both accomplices was opposite to the position role played by the *S* and in line with the *S*'s pretest attitude.

Ss were initially isolated in private rooms and told that the other "Ss" in the experiment were also being isolated. The study was introduced as a study in group dynamics designed to measure interactions in a three-person group when one member disagrees with the other two. Each *S* was told that she had been randomly picked as a deviate in her group. An experiment by Schachter (9) incorporating accomplices was briefly described, and it was explained that the present study was much the same. All Ss were informed that the other "Ss" were taking a questionnaire by which an indication of their attitude toward enforced dress standards could be obtained. No matter what opinion the other "Ss" had, the *S* was told she would oppose them. If

the two "Ss" disagreed, the *S* was told she would take a middle stand, disagreeing with them both to some extent. Ss were warned that they might be required to argue counter to what they really believed. All Ss agreed to do so. Ss were also informed that a questionnaire would be administered at the end of the discussion and were asked to answer it as they really felt. Quoting from the instructions, "We are mainly interested in the other girls' answers, but we also need your answers, so go ahead and fill out the questionnaire, answering as you actually feel. We can't compare your answers to the others, since you know the purpose of the study, but we can compare them to the answers of accomplices in other groups. What I'm saying is, we would like to know how you feel about the discussion also; so go ahead and answer the questionnaire as you really feel."

Ss were informed after memorizing a list of 10 arguments of the position that the other "Ss" were supposed to have. In each case, the *S* argued counter to her original attitude.

a. Information Control. All Ss were asked to memorize the same list of 10 arguments (five pro and five con) regarding enforced dress standards in order to be prepared to argue either or both ways. After the Ss were informed of the direction they would be arguing, they were asked to use all five memorized arguments in that direction during the discussion and to stick to those five arguments "in order to introduce as much control as possible." Ss were allowed approximately 15 minutes for memorizing.

b. Anticipated Continuation vs. Termination of Role Playing. In 20 of the groups, each *S* was told that immediately following the experiment, the other girls would be informed that each *S* was merely role playing and did not necessarily believe all the statements she made. Each of the remaining Ss was told that a short follow-up study would be made in a week and that she must maintain her role-play orientation up to that time. To reinforce this, a follow-up "appointment" was made before the *S* took the posttest questionnaire for one week hence.

c. Pleasant vs. Unpleasant Pre-exposure. For half of the Ss, *E*₂ interrupted their memorization before adequate time for memorizing had been allowed. Each *S* in this condition was interrupted at four minutes, seven minutes, and 12 minutes. On the first interruption *E*₂ said, "Done yet? Guess I'll have to give you more time," in a negative tone of voice. On the second interruption, the *S* was quizzed regarding the arguments, and *E*₂ stated, "That's not good enough, you'll have to do better," and walked out. On the third interruption, he asked again that the arguments be repeated from memory. He then said, "I can't give you any more time. That will have to do." *E*₂ did not smile and

was cold and demeaning toward Ss throughout. Rather than greet the S on entering the room, he began to read the instructions dryly. These Ss were seated on hard chairs in a very small, undecorated room. For the remaining Ss, E_1 acted warm and understanding. Thanks was extended for the Ss participation. No pressure was applied during the memorization phase and embarrassing tests of recall were eliminated. These Ss were seated in a larger room in a recliner used for hypnosis studies.

The S was then brought together with the accomplices for a six-minute discussion. The E read instructions to introduce the topic, but the discussion itself was not structured. Impressive-looking equipment used in group dynamics research was turned on and group members spoke into microphones to reinforce the idea that this was a group dynamics study. No readings from the equipment were taken. After the discussion, each S was given a questionnaire. The form was similar to the pretest scale, except for different filler questions surrounding four key items, identical to items on the pretest. The filler items related to perceived leader, group cohesion, and other variables common in group dynamics research. Ratings of enjoyment of the discussion were included as a check on the pleasant-unpleasant manipulation. Also, open-ended questions pertaining to the purpose of the experiment were added. On completion of the study, its real intent and the deceptions used were explained in detail.

C. RESULTS

As a check on the pleasant-unpleasant manipulation, three questions on the postsession questionnaire were used as an index of attitude toward participating in the study. Ss in the unpleasant condition enjoyed the study less than Ss in the pleasant condition ($p < .077$; $df = 17$). The mean and standard deviation were 14.3 and 6.0 for Ss in the unpleasant condition, and 10.9 and 5.7 for Ss in the pleasant condition. Low scores indicate greater liking.

An analysis of covariance was performed on key questionnaire items, with the covariate being answers on the pretest questionnaire. Ss expecting that their role play would continue through a second session changed their attitudes more than did Ss expecting the role play to end with the first meeting ($F = 5.55$; $p < .05$). Differences were not significant on the positive-negative dimension, and there was no significant interaction.

Difference scores between pre- and postsession questionnaires were obtained. The mean of the difference scores for Ss in each group was compared with the mean difference score for control Ss with the use of a procedure described by Winer (10, p. 264). Ss in the group expecting to continue with their role-

play orientation tended to change their opinions in the direction they role-played. Those expecting their role playing to terminate tended to change little and in the opposite direction. Neither of these conditions was significantly different from the control group. The unpleasant-continuation of role playing condition approached significance at the .05 alpha level. The pleasant-continuation of role playing condition was significantly different from the control group. As determined by answers to an open-ended question on the posttest questionnaire and statements made when questioned orally during the debriefing, none of the *Ss* were aware of the purpose of the study prior to its conclusion.

D. DISCUSSION

As expected, the *Ss*' anticipation of the continuation of role playing does appear to make a difference in the amount of attitude change after a role-playing experience. Somewhat surprising was the finding of no significant differences in attitude due to the pleasant and unpleasant manipulation. Previous research—e.g., Janis and Gilmore (5)—suggests differences should be found. The pleasant-unpleasant manipulation may have been ineffective in the present study; however, that is doubtful since differences in reported liking for the experiment between *Ss* in the pleasant and unpleasant conditions approached significance at an alpha level of .05. In addition, comments from *Ss* in the unpleasant condition during the debriefing indicated that *E₂* played his role convincingly. That is, *Ss* in the unpleasant condition described *E₂* in negative terms: e.g., "cold," "disinterested," and "mean." No *Ss* in this condition voiced approval of *E₂* in any form.

It seems more probable that differences found by Janis and Gilmore resulted from creating different reference groups rather than from the difference between positive and negative incentives. *Ss* in the welfare-oriented-sponsor condition may have experienced most attitude change because of identification with the sponsor and the "group" he was representing. It appears rather clear that reference groups can have a powerful effect on attitude development and change. The present study did not involve reference groups, and this may account for differences in the findings of this study and the one by Janis and Gilmore.

An interpretation of dissonance theory following Cohen (3) suggests differences should have been found between the pleasant and unpleasant conditions, but in a direction opposite to that predicted by incentive theory. *Ss* had a choice given them of participating or not in the study after details of their assignment had been explained. It is assumed they felt a degree of

responsibility for their role-played statements. It is also assumed that arguing counter to a strongly held belief was an unpleasant experience. There would be fewer compelling reasons for performing the task if the *E* was perceived as cold and mean; therefore, more dissonance would be expected of *Ss* in this condition. It is possible dissonance was higher in these *Ss* but was reduced in ways other than attitude change. The many different predictions that can be made from dissonance theory make an adequate test almost, if not, entirely impossible.

The termination and continuation of role playing conditions were significantly different. The results of this study indicate that counter-attitude role playing was most effective when the role player expected to maintain the role-played orientation in future contacts with the observers. The expectation of a second meeting could have had an effect by increasing dissonance. It has already been pointed out [Aronson (1) and Carlsmith, Collins, and Helmreich (2)] that face-to-face confrontation may be more dissonance producing than anonymous essay writing. Perhaps increasing the salience of the group by an expected rematch had a similar effect. The *Ss* in this study did not know one another and had no reason to expect meeting each other except at the "follow-up session." It is feasible that more attitude change would have occurred if the *Ss* were familiar with one another and could expect considerable contact. That point seems to be worthy of investigation.

From the present study, it appears that public commitment can be a powerful variable when future contact with the group is expected. The results of this study lend weight to the hypothesis that role playing is effective because of the relationship introduced between the *S* and another group.

E. SUMMARY

Thirty-six female undergraduates, selected from introductory psychology classes on the basis of pretest attitude scores, took a counterattitude stand in a three-person group with two female accomplices. Each *S* was led to believe she was playing the role of a deviate in a group dynamics study. As determined by an analysis of covariance on pre- and posttest attitude scores, *Ss* expecting to maintain their role-played orientation through a "follow-up session" one week later changed their attitude significantly in the direction they were role playing. This occurred when information input was controlled for all *Ss*, and it occurred for *Ss* in both a pleasant and unpleasant condition. *Ss* not expecting a second meeting changed their attitudes little and in the opposite direction. There were no differences in attitude change between *Ss* in the pleasant and unpleasant conditions.

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Department of Psychology
Brigham Young University
Provo, Utah 84601



ROLE PERCEPTION AND THE RELATIVE INFLUENCE OF THE PERCEIVER AND THE PERCEIVED*

University of Nevada, Reno

JOHN C. TOUHEY

A. INTRODUCTION

A recurrent problem in social perception concerns the extent to which the characteristics of the perceiver and the perceived influence the categories of interpersonal cognition. One traditional approach to this problem (e.g., 4) has focused largely on the personality characteristics of the perceiver and examined his descriptions of the perceived from the perspective of experimental manipulations that affect perception. The complementary research approach [reviewed by Jones and Davis (2)] has tended to examine the categories of person cognition in terms of the behaviors of the perceived person, particularly discrepancies between his behaviors and the roles ascribed to him. One study by Dornbusch, Hastorf, Richardson, Muzzy, and Vreeland (1) attempted to examine the relative influence of the perceiver and the perceived and raised a number of questions concerning the generalizability of many findings in this area. Dornbusch *et al.* elicited children's descriptions of other children in three Summer camps. Contrasting two children's descriptions of one child with one child's descriptions of two children enabled the investigators to attribute overlap in descriptive categories to both common perceivers and common perceived persons. Not only was the larger category overlap found in a common perceiver, but the effects for a common perceived person were so small that they only slightly surpassed the category overlap in two children's descriptions of two children.

A consideration of the subjects and the setting of the Dornbusch *et al.* study raises the possibility, however, that greater category overlap within a common perceiver may be limited to situations in which participants ascribe few roles to others and are able to treat interaction partners in similar ways. In addition, the similar findings for a common perceived person and two perceived persons suggest that perceivers may not have discriminated individual differences among their camping partners. A plausible interpretation of these findings, then, hypothesizes that the Dornbusch *et al.* children may have re-

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sponded to very general conceptions of others, an idea similar to Mead's (3) notion of the generalized other. Pursuing the explanations of the symbolic interactionist perspective somewhat further, Mead's theory suggests that maximum category overlap within a common perceiver and least overlap for a common perceived person might be attained when subjects are describing highly generalized others. However, this finding would not generalize to instances where the perceiver is required to discriminate between two individuals who occupy powerful role positions.

The present study examined both of these hypotheses. Subjects were randomly divided into two role positions. In role positions of power, subjects were not required to attend to individual differences between subjects who played complementary roles. The subjects who occupied role positions of lesser power, however, were required to discriminate between their interaction partners.

B. METHOD

The Ss were 60 male undergraduates drawn from introductory psychology classes at the University of Nevada, Reno. They were run in groups of four each. The experiment was introduced as a study of personality factors in the persuasion process. Two Ss were selected at random to play the role of judges and the two remaining Ss were assigned to the role of writers. The instructions emphasized that the writers were to write an essay on a campus social issue designed to persuade both judges. In order to facilitate the writing, Ss were asked to exchange a number of attitude statements and biographical information. In an alternating sequence each S announced his age, major, year in school, career plans, father's occupation, and his attitudes on a number of national, local, and campus political and social issues. Ss assigned to the role of writer were encouraged to pay considerable attention to the statements of the judges in order to write an essay that would be maximally persuasive to both judges. Following the information exchange each writer described the two judges and each judge described the two writers on a 300-word trait checklist.

C. RESULTS

In order to determine the relative influence of the perceiver and the perceived on the interpersonal descriptions, a percentage analysis of overlapping trait words was employed. The percentage of identical traits used by one judge in describing two writers, and the corresponding statistic for each writer's descriptions of the two judges provided the measure of trait overlap

for a common perceiver. The percentage of identical trait words ascribed by two judges in their descriptions of one writer, and both writers' descriptions of each judge yielded a measure of trait overlap for a common perceived person. Finally a comparison measure for the common role was derived from an examination of two judges' descriptions of two writers and two writers' descriptions of two judges.

Table 1 shows the mean percentage of trait overlap for a common perceiver, common perceived person, and a common situation for Ss in each role

TABLE 1
PERCENT TRAIT OVERLAP FOR THREE PERCEPTUAL SOURCES
AND TWO ROLE POSITIONS

Role position	Common perceiver	Source Common perceived person	Common situation
Judge	42%	33%	24%
Writer	29%	43%	26%

position. Ss who played the role of judges show larger trait overlap within a common perceiver than for a common perceived writer. For Ss playing the role of writer, however, the percent of trait overlap for a common judge is larger than the overlap within an individual writer. For writers the trait overlap in a common perceiver, 29% only slightly exceeds the overlap for a common situation, 26%, suggesting that large idiosyncratic variances in the perceiver may be eliminated by instructions that create accuracy "sets." A 2×3 analysis of variance confirms these findings. The main effect for role position is nonsignificant; there is a significant main effect ($F = 3.2$ $p < .05$) for source of perception, and the expected interaction also attains significance ($F = 6.0$ $p < .01$).

D. DISCUSSION

The interaction between anticipated role performance and the relative influence of the perceiver and the perceived on interpersonal description sustained the hypothesis. In particular, it is pertinent to indicate two aspects of the present laboratory setting that reinforce this interpretation. First, as noted by Dornbusch *et al.*, the proportion of category overlap within in a common perceiver may be affected by a number of variables that do not necessarily follow from role concepts. In the present study, for example, Ss cast in role of writer were not only given an accuracy "set," but were encouraged to obtain favorable evaluations from both judges. In consideration of the instruc-

tions, then, it is hardly surprising that individual differences between the two judges would be major sources of attribution and that perceiver idiosyncrasies would attenuate. The converse argument also applies to the descriptions by the judges. They were led to believe that their roles involved the evaluation of essays rather than the descriptions of persons; and, second, judges received assurances that interaction with the writers would not be resumed after the evaluation.

Within the limitations imposed by an analysis of the setting, the findings reemphasize the need to study the attribution of person concepts in the contexts of role ascriptions. A large body of conflicting findings concerning the influences of the perceiver and the perceived on person perception may be resolved when discrepant findings are examined from the perspective of role concepts. Further, the larger body findings concerned with similarities in the descriptions of others and the descriptions of oneself may also be set into an interacting framework of personal and situational attributions of causality. The large overlap in self-other attributions frequently appears in studies that require subjects to describe hypothetical persons, the average man or woman, or any highly generalized other. According to this view, the ascription of similar person concepts to oneself and to others is most probable when similar roles are imputed to both participants. Thus, role ascriptions have long been implied but more rarely have they received explicit consideration as ordering concepts in the study of interpersonal cognition. In sum, the perception of persons appears to occur in the framework of role perception, and attribution theories of person concepts may not be complete without an examination of the situational concepts ascribed to the behaviors of the perceived.

E. SUMMARY

Recent studies on the relative influence of the perceiver and the perceived in social perception raise the possibility that role positions may affect both actor's and observer's contributions to interpersonal cognition. Sixty male Ss anticipated role performances of either writers or judges. Following a brief information exchange, descriptions were obtained for complementary role incumbents. Findings showed larger identical trait overlap within a common perceiver for the judge's descriptions of writers but larger overlap for the perceived person in writer's descriptions of judges ($p < .01$). There was also a main effect for source of attribution ($p < .05$), but none for the experimental manipulation. It is suggested that recent findings in attribution research may be limited to situations that imply similar role ascriptions across

actors and observers and that attribution theory must examine perceptions of situational, as well as personal, causation.

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Department of Sociology
University of Nevada
Reno, Nevada 89507



THE PERCEPTION AND CLASSIFICATION OF COLLECTIVE BEHAVIOR*

University of Lethbridge, Canada

GORDON W. RUSSELL¹

A. INTRODUCTION

The history of man records a full range of diverse activities conducted in concert with others, which have generally been subsumed under the heading of mass phenomena or collective behavior. While a consensus is lacking on a definition of the phenomena, there is substantial agreement that they are characteristically noninstitutionalized and involve interaction among the participants (2, p. 728). For social scientists, the task has traditionally been one of recording, analyzing, comparing, and pigeon-holing such phenomena within some *a priori* conceptual framework. The all-too-frequent result of such models to date has been that some events seem to defy unequivocal classification, either within a single category of collective behavior or, indeed, as collective behavior *per se*.

Also, the vital question of prediction has seldom been broached except by way of *ex post facto* analyses in which cases prediction is presumed to be a consequence of better understanding the dynamics of the phenomena. It seems fair to say that no explanatory models to date permit testable predictions of their central concepts beyond the laboratory. Where a theory has the potential of being predictive, the inherent difficulty of operationally anchoring and weighting the relevant concepts in any potentially predictive situation becomes apparent. For example, a recent summary and evaluation of Smelser's (11) value-added theory (6) points up the difficulty of directly relating in a clear-cut fashion the major concepts of this and other theories to empirical events. In summary, it is suggested: "Smelser's scheme is less a theory than a taxonomic structure, a general set of rubrics useful for describing a collective episode but not itself open to disconfirmation" (6, p. 561).

A measure of agreement is easily reached affirming that the phenomena of riot, revolution, and war are in some respects intuitively quite similar. The same is true of fad, craze, and mass hysteria which seem proximal to each

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other along yet another dimension. While it would be of value to know the multidimensional structure perceived to underlie a domain of collective behaviors, it is also suggested that the order and distances of phenomena along such perceptual dimensions may constitute a means of classification.

A major assumption of the model so derived is that the perceptual dimensions are isomorphic to those actual dimensions which account for changes in form in the real world of historical, present, and future events. Thus, changes in the scale positions along the perceptual dimensions are assumed to correspond to externally defined reclassifications. For example, perhaps the only difference between riots and revolutions is the scope and intensity of the conflict, being alike in all other respects, or, along all other dimensions. A particular riot seen to move closer to revolution over time should begin to evidence more revolution-like consequences: i.e., perhaps the stability of a government becomes imperiled.

In stressing the nonstatic nature of collective phenomena, the more valuable taxonomy would be one sufficiently sensitive to reflect continuous changes in a phenomenon over time within a category or otherwise allow for reclassification. Thus, to be able to determine the point(s) at which the constituent elements of a riot become sufficiently altered such that it now qualifies for reclassification as a revolution denotes a more sensitive classificatory system. While collective phenomena are complex multifaceted stimuli, certain regularities or communalities seem evident as noted above. Therefore, it seems a reasonable proposition that the perceived regularities of experts given formal expression might, in addition to describing the dynamics underlying the phenomena, serve as a means of classification.

The vehicle proposed for such a model is multidimensional scaling (MDS). These procedures place few constraints upon the judges who are simply asked to make similarity ratings between all possible pairs of stimuli. Whereas the number and nature of dimensions resulting from a factor analysis are a function of the measures taken initially, MDS essentially uncovers those dimensions actually being used by the *S*'s in their processing of information from a particular domain.² This contrast with traditional scaling is summarized by Schroder and Blackman (10, p. 1): "The MDS model assumes that in making judgments, people may combine one, two, or more attributes of objects. In ordinary psychological scaling, persons are asked to judge objects on one attribute at a time; e.g., 'redness,' which is defined by the experimenter. In the MDS method, the bases or attributes to be used by the *S* in

² Factor analyses of conflict have been conducted by Rummel (8, 9) and Tanter (12) based upon measures provided by Richardson (7). Such thorough documentation is understandably lacking for other forms of collective behavior.

making judgements are *not* given. The object of the technique, in other words, is to discover the attributes involved." Thus, any collective phenomenon could be uniquely located in N-dimensional space for a particular point in time. As specific examples of such phenomena undergo changes in form over time, such changes should elicit changed perceptual judgements from the experts with the new indices representing more accurately their order and distances in N-dimensional space *vis-a-vis* the generic categories. Further flexibility accrues to the model in that the generic categories too can change. Should the "nature" of war, for example, evidence gradual change over time, such change should be reflected in changed perceptions on the part of our experts.

B. METHOD

By way of testing the feasibility of a preliminary model, data were collected from a group of volunteer judges. Senior students of the University of Lethbridge (20 male and 22 female) enrolled in a sociology course entitled *Collective Behavior* constituted a group of quasi-experts for purposes of the study. Whereas experts would ideally be individuals having had first-hand experience with all forms of collective behavior, plus a knowledge of historical examples and theoretical viewpoints, the present definition is restricted to students exposed to a semester of lectures, readings, and coverage of Lang's (5) volume *Collective Dynamics*.

A week prior to their final examination the judges were paid \$1.50 each and asked to rate the degree of dissimilarity of all 171 possible pairs of 19 stimuli on a 9-point rating scale. A random procedure was used for determining the order of presentation of the pairs with that order reversed for one-half of the judges to minimize differential order effects. In addition to 15 generic terms arbitrarily selected as constituting the major forms of collective behavior, four specific marker variables (i.e., Black Power, Flower Children, Miniskirts, and U.F.O.'s) were added to aid in the interpretation of resulting dimensions. The dissimilarity matrix of means was analyzed by Young's (14) program for nonmetric multidimensional scaling. Young (15) provides an index of metric determinacy for the procedure, as well as a table of the index related to the number of scaled stimuli, the true dimensionality of the data, and Kruskal's (4) "stress" measure.

C. RESULTS

A four dimensional solution was indicated on the basis of interpretability and the considerations noted above. The varimax rotated configuration is presented in Table 1.

The first dimension was identified as one reflecting the magnitude of

TABLE 1
VARIMAX ROTATED CONFIGURATION

Variable	I	II	III	IV
War	.503	-.110	-.113	.229
Black Power	.438	.301	.007	-.124
Revolution	.406	.101	-.226	.104
Riot	.393	-.207	-.067	-.200
Lynching	.363	-.156	-.155	-.397
Crusade	.277	.507	-.029	.252
Panic	.169	-.493	-.045	-.035
Mass Hysteria	.101	-.338	-.111	-.044
Acquisitive Mob	.100	-.310	.322	-.359
Social Movement	.013	.407	-.122	.084
Mass Conversion	-.037	.095	-.031	.376
Bank Run	-.048	-.530	.005	-.080
Apathy	-.129	.129	.876	.130
Mania	-.151	-.042	-.146	-.280
Flower Children	-.293	.525	.121	.152
U.F.O.'s	-.473	-.324	-.080	.147
Craze	-.505	.001	-.069	-.013
Fad	-.611	.217	-.076	.018
Miniskirts	-.633	.225	-.060	.040

Violence present in each of the behaviors. War, Black Power, Revolution, Riot, and Lynching, all may involve or advocate destruction of individuals and/or property through violence in varying degrees.

The second dimension seems best conceptualized as an *Amorphous-Focused* continuum. Those stimuli with high loadings (i.e., Flower Children, Crusade, and Social Movement) are characterized by being nonspecific in locus, non-immediate temporally and more diffuse with respect to their objectives. Stimuli at the opposite end of the dimension are conversely specific in locus, immediate, and temporally transient.

Dimension three was described as *Anomie* in view of a theme of disengagement from the mainstream of society. Apathy during crises, looting, hoarding during times of impending shortage, and Flower Power represent a breakdown of social norms and values.

A tentative interpretation of *Ideology* was offered in the case of the fourth dimension. Mass Conversion, Crusade, War, and Flower Children share a common theme in which each phenomenon is perceived to be espousing a particular religious or ideological point of view.

D. DISCUSSION

While the limitations of our expert sample are acknowledged, the results of this analysis have provided the normalized scale positions of the stimuli along each of four major dimensions perceived by the judges as underlying a

nonrandom sample of collective behaviors. A four-digit index representing the scale positions of generic or specific phenomena on the four dimensions can thus serve to identify and uniquely categorize them in a common perceptual space. This type of classificatory system thus eliminates the need for discrete categories, replacing them with a dimensionally determined four-point index whose value can change in a continuous rather than a discrete fashion.

As regards the wisdom of using quasi-experts instead of more knowledgeable judges, it may actually be the case that they represent more of an ideal for this particular task. Fully qualified experts may indeed generate results that reflect nothing more than entrenched theoretical allegiances whereas the quasi-experts used in the present study were not wedded to any theoretical position and presumably had more degrees of freedom in making their judgments of dissimilarity. The important comparison of experts, quasi-experts, and the general public remains to be made. An acceptable level of agreement on the dimensions and the position of stimuli along those dimensions within or between levels of expert would provide evidence of the generality of the taxonomy.

With respect to the actual interpretations offered, a logical next step would be the collection of data attesting to their validity. For instance, an independent sample might be asked to rate the concepts on each of the four continua and thereby establish the degree of relationship.

The similarity between the present *violence* dimension and those identified as *turmoil* and *internal war* by Rummel (8, 9) and Tanter (12) bears note. Rummel (8) has distinguished between the dimensions on the basis of their being spontaneous rather than planned types of conflicts. Within the realm of collective behavior such a distinction seems not to be made perceptually as both types of conflict load heavily on the factor.

The inclusion of marker phenomena in the analysis has served to make apparent the equivocal nature of conventional labels. Whereas Miniskirts and Fad remain in close proximity in the graphic plotting of points between any pair of the four dimensions, Black Power and Flower Children are poles apart on the violence dimension and only somewhat proximal to Social Movement on remaining dimensions (See Figures 1 and 2.) The procedure thus offers the possibility of providing insights into how or in what ways various phenomena (i.e., movements) are similar and how they relate to their generic designation(s).

A feature of the proposed taxonomy is the presence of that needed flexibility which will allow one to track changes in a specific phenomenon over time. When the example of Black Power is considered, the movement today is some-



FIGURE 1
DIMENSIONS OF VIOLENCE (I) AND AMORPHOUS-FOCUSED (II)

what different than at an earlier time in its history and, again, will probably assume different features over the next few years. The task of judging the stimulus pairs took less than 25 minutes and thus a selected group of experts could reasonably be asked to make such judgments at regular intervals and in times of social change. If Black Power were found to be steadily moving

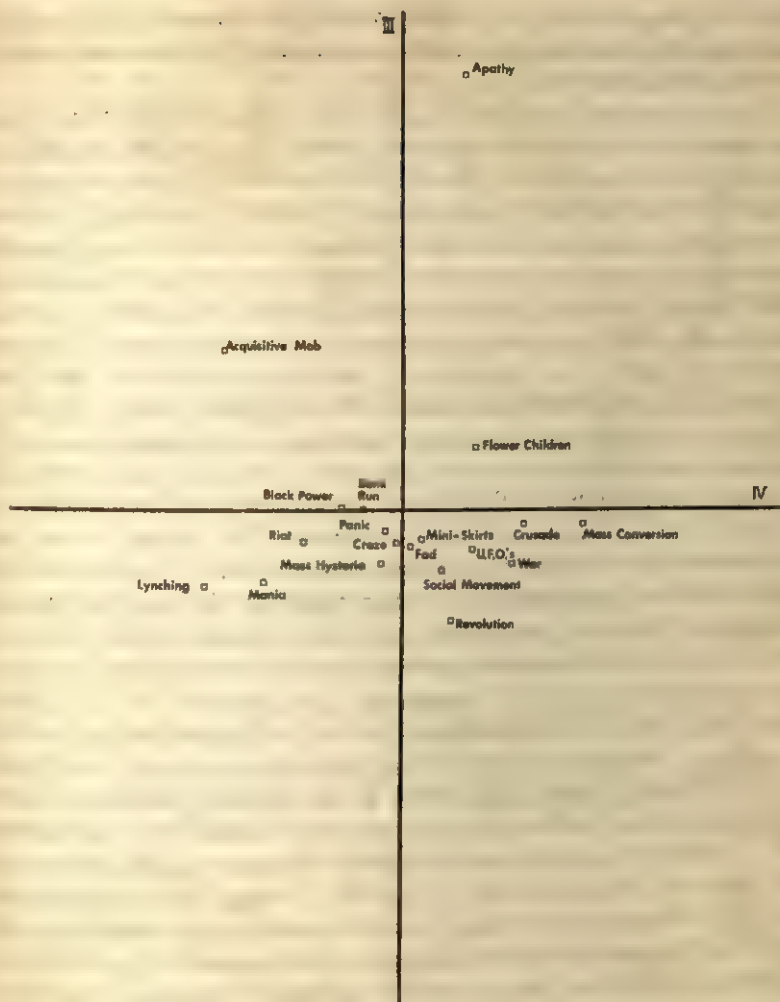


FIGURE 2
DIMENSIONS OF ANOMIE (III) AND IDEOLOGY (IV)

along the violence continuum in a direction of increasing intensity from one point in time to the next, it might soon come to qualify more appropriately as a revolution, instead of its present ambiguous label of Social Movement.

Extensive listings of evaluative criteria for taxonomies have been provided by Deutsch (3) and Altman (1). While the test of some criteria must

await the passage of time—i.e., reliability, use and acceptance by the scientific community, the generation of internal distinctions—(1), others can be applied even to a preliminary model.

While it is perhaps premature to offer more than a comment on the possible predictive capability of the system, it must ultimately be assessed (1). Assuming for the moment the possibility that the four dimensions adequately describe the important underlying processes, it would be interesting to speculate as to the effects that changes in scale position(s) on one or more dimensions would have on remaining dimensions. Would a developing social movement which became less anomic become increasingly violent? Or, would a collective phenomenon which became more doctrinaire become more focused . . . more potentially violent? It is predictions of this type more so than those based on tracking or trends that would seem to hold the greatest promise initially.

Basic to the merits of the model as a predictive, explanatory framework is the assumption that each of the four dimensions and relationships perceived by the judges is isomorphic to those actual dimensions which would allow one to understand the dynamics of these phenomena. The assumption may well be warranted if the identification of dimensions has merely served to formalize the intuition and vague feelings of those expert on the topic who perceive regularities. Otherwise, the present classificatory scheme may be simply the public's view of the phenomena and not relate to inherent factors accounting for internal processes of the phenomena. This distinction has been clearly drawn by Turner: "The classificatory scheme builds into the analysis some conception of the aspects which have most pervasive significance for the course of the phenomena under study. There is an important distinction between schemes which stress qualities that are assumed to be intrinsic to the phenomenon under investigation and those which stress the character of the response of the environment to the phenomena" (13, p. 66). It may be the case that only some of the dimensions correspond to those intrinsic to the phenomena. The answer to this question and the subsequent determination of the number and weighting of important intrinsic and/or descriptive dimensions must assume some priority in the development of the system.

E. SUMMARY

A classificatory model of collective behavior based upon perceptual dimensions was proposed. The four major dimensions found to underlie a domain of collective phenomena were identified as: (a) Violence (b) Amorphous-Focused, (c) Anomie, and (d) Ideology. Potentially predictive aspects of the system were examined briefly.

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Department of Psychology
University of Lethbridge
Lethbridge, Alberta, Canada



IMPRESSION FORMATION AS A FUNCTION OF SELF VERSUS OTHER AS SOURCE OF THE INFORMATION*¹

State University of New York, College at Oswego

RICHARD R. IZZETT² AND WALTER LEGINSKI

A. INTRODUCTION

According to various balance theories (1, 4, 7), if a source is associatively linked with a positive trait word (e.g., Mr. X is reasonable), theoretically there should be a positive change in the evaluation of the source; or alternatively, if a source is associatively linked with a negative trait word (e.g., Mr. X is unreasonable), theoretically there should be a negative change in the evaluation of the source. As Rosenbaum and Levin (8) have pointed out the impression that is formed of the described person is a function of both the content of the information and the credibility given to the source of the information. Drawing on the well-documented finding of the attitude change literature that a high credible source has more persuasive impact than a low credible source (5, 6), Rosenbaum and Levin predicted and obtained support for the hypothesis that within the area of impression formation, informational items of a given value attributed to a stimulus person receive more weight when supplied by a high credible source than when supplied by a low credible source.

An interesting question not covered by Rosenbaum and Levin arises when one asks what type of impression is formed of a stimulus person when the source of the information about the stimulus person is the stimulus person himself. Will the stimulus person be evaluated more positively or negatively when he is describing himself or when a third party is describing him? Will a different effect be obtained when the stimulus person is describing himself in a positive light *versus* a negative light? These are the questions to which this study is directed.

Freedman, Carlsmith, and Sears mention that "even though someone may

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be the world's greatest expert on poetry, we would not be influenced by his writing reviews of his own poetry" (3, p. 299). In order for a communicator to have a persuasive impact, his trustworthiness must not be in doubt. Walster, Aronson, and Abrahams (9) have demonstrated that even a low credible source can be more persuasive than a high credible source when arguing against his own self-interest.

In accordance with the above finding the following hypotheses are made:

1. There will be a significant interaction between source of information and type of information: that is, (a) a *less favorable* impression of a stimulus person will be obtained when the source of *favorable* information about the stimulus person is the stimulus person himself than when the source of the favorable information is not the stimulus person and (b) a *less negative* impression of a stimulus person will be obtained when the source of *negative* information about the stimulus person is the stimulus person himself than when the source of the negative information is not the stimulus person.
2. There will be a main effect for type of information; that is, positive information will produce more favorable evaluations of the stimulus person than negative information.

B. METHOD

1. Subjects

Fifty-six students taking an introductory psychology course at the College of Oswego were randomly assigned to one of four treatment conditions generated by the two types of trait words—positive and negative—and by the two sources of information—self as a source and no source (or implied third person). There were 14 subjects in each treatment condition and all subjects were run in groups of 6 to 18.

2. Stimulus Material

Six trait words, three with positive ratings and three with negative ratings were selected from Anderson's (2) list of personality trait words. The three positive trait words were thoughtful, trustful, and reasonable; while the three negative trait words were thoughtless, distrustful, and unreasonable.

3. Procedure

After all subjects arrived in the experimental room, each subject was handed a four page booklet. Randomization of subjects to treatment conditions was obtained by shuffling the four types of booklets representing each treatment condition prior to the subjects' entering the experimental room.

The first page of each booklet contained a series of instructions informing the subject that on the following three pages he would be given brief one-sentence descriptions of a few hypothetical men—one description per page. Subjects were instructed to read the description of the hypothetical man and then rate him on a seven-point bipolar scale of like-dislike set up in semantic differential form. In the self as a source treatment condition, the instructions also contained the additional sentence "The source of the information about each man is the man himself."

In the self as a source, positive information treatment condition, the subjects were presented with the following three stimulus items: (a) Mr. X has stated that "he is thoughtful"; (b) Mr. Y has stated that "he is trustful"; and (c) Mr. Z has stated that "he is reasonable." In the self as a source, negative information treatment condition, the stimulus items presented to the subjects were (a) Mr. X has stated that "he is thoughtless"; (b) Mr. Y has stated that "he is distrustful"; and (c) Mr. Z has stated that "he is unreasonable." In the no source (or implied third person) positive information treatment condition, the stimulus items presented to the subjects were (a) Mr. X is thoughtful; (b) Mr. Y is trustful; and (c) Mr. Z is reasonable. In the no source negative information treatment condition, the stimulus items presented to the subjects were (a) Mr. X is thoughtless; (b) Mr. Y is distrustful; and (c) Mr. Z is unreasonable. Each of the three descriptive statements in each booklet was of the same format, representing one of the four treatment conditions. The order of each of the three descriptive statements in each booklet was also randomly varied.

C. RESULTS

In a test of the hypothesis, the three evaluative ratings that each subject gave were summed and then the analysis of variance was performed on these summated scores. The neutral point on each of the seven-point bipolar scales of like-dislike had a scale position of 4; therefore a summated rating of 12 across the three evaluations represents a neutral impression, a summated rating above 12 a positive impression, and a summated rating below 12 a negative impression. Mean evaluation scores for the summated ratings for treatment conditions are presented in Table 1.

In support of the first hypothesis a significant interaction was obtained ($F = 22.516$, $df = 1/52$, $p < .001$) between source of information and type of information. That is, a less favorable impression of the stimulus person is obtained when the source of the positive information is the stimulus person himself, and a less negative impression of the stimulus person is obtained when the source of the negative information is the stimulus person himself.

TABLE 1
MEAN EVALUATIONS OF STIMULUS PERSON FOR TREATMENT CONDITIONS

Source	Information		Row mean
	Positive	Negative	
Self	14.64	10.00	12.32
Other	17.85	6.00	11.92
Column mean	16.25	8.00	

The obvious prediction of positive information producing more favorable impressions than negative information was also supported ($F = 117.78$, $df = 1/52$, $p < .001$). There was no main effect for source of information ($F < 1$).

D. DISCUSSION

The results support the hypothesis that presenting positive information about one's self produces a *less* favorable impression than if the positive information had been presented by someone other than one's self. Alternatively, presenting negative information about one's self results in a *less* negative impression than if the negative information had been presented by someone other than one's self. Perhaps the first of these two findings may be referred to as a "bragging" effect or the "no one likes a bragger" phenomenon; while the second may be interpreted as the "at least he admits his faults" phenomenon.

The results of this study are in accordance with those of Walster *et al.* (9). Walster and her associates found that sources of information arguing against their own self-interests are more persuasive than sources who argue in favor of their own self-interest. She interpreted her findings in terms of the source's trustworthiness and intentions to persuade. The results of the present study may be interpreted in the same light.

E. SUMMARY

Fifty-six introductory psychology students were randomly assigned to one of four treatment conditions generated by a 2×2 factorial design. Subjects received either positive or negative information about a stimulus person from the stimulus person himself or an implied third person. In support of the hypothesis ($p < .001$), positive information about a stimulus person stemming from the stimulus person himself results in a significantly less favorable impression than the same information stemming from an implied third party. Alternatively, negative information about a stimulus person stemming from the stimulus person himself results in a significantly less negative impression than the same negative information stemming from an implied third party.

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Department of Psychology
State University of New York
College of Arts and Science at Oswego
Oswego, New York 13126

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THE POINT FALLACY AND LATITUDE DIMENSIONS OF ATTITUDE CHANGE*

Department of Psychology, Midwestern University; and Department of Psychiatry and Behavioral Sciences, University of Oklahoma Medical Center

LAWRENCE A. RUDIN¹ AND WILLIAM R. HOOD

A. INTRODUCTION

Sherif's social judgment-involvement approach (11, 13, 14) to attitude formation and change was a resultant of problems inherent in the traditional techniques of attitude measurement: i.e., Thurstone's equal appearing interval method (15), Likert's internal consistency method (7), and Guttman's scalogram analysis (3, 4). One problem common to all three measurement techniques is the erroneous assumption that an individual's attitude can be adequately measured and described by a single point or average score along a reference scale. This error is herein termed the *point fallacy*. Thus the concepts and related measurements of the latitude of acceptance, latitude of rejection, and latitude of noncommitment (11, 12, 13, 14) were developed.

While Sherif relates the point fallacy to the measurement of attitudes *per se*, he does not consistently relate it to the measurement of attitude change (11, 14). Primarily, attitude change for Sherif and those who have used his measurement technique (e.g., 1, 2, 10, 11) has been a change in the major anchor of the reference scale: the own or most acceptable position. An additional approach to attitude change appears to have been overlooked. If an attitude is, as Sherif defines it, ". . . the individual's set of categories for evaluating a domain of social stimuli . . . (14, pp. 336-337)," then why should attitude change be considered a change in only one dimension of the reference scale? The basis for Sherif's model is that an attitude cannot be represented by a single point measure; rather, an attitude is the whole judgment continuum. Then would not a change in any or all dimensions of that continuum (for instance any of the latitude dimensions) be considered a change in the attitude? If an attitude is a set of categories, then attitude change should be considered a change in judgment of the categories as well as a change in the major anchors.

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The present study is an attempt to contribute to the redefinition of the construct attitude change. More specifically, it is an attempt empirically to (a) change an attitude by changing a latitude dimension (acceptance, rejection, or noncommitment), (b) without changing the most acceptable position. Since earlier studies (e.g., 1, 2, 6, 11) attempted to change own position by means of moderate and extreme one-sided discrepant communications, this study attempts to change a latitude dimension by means of moderate and extreme two-sided mixed communications. A mixed communication is one in which both pro and anti arguments are interspersed within the communication, rather than presenting the pro and anti arguments sequentially as is usually the case with two-sided communications.

B. METHOD

Four hundred and forty-one male and female subjects were tested in the classroom situation at Midwestern University, Wichita Falls, Texas, in a modified pretest-posttest control group design. Of the 441 subjects, 392 with complete and unspoiled responses were used for analysis, with 149 receiving the extreme mixed communication, 154 receiving the moderate mixed communication, and 89 receiving the control (no communication) condition. Each of the three experimenters tested five classes, one of which served as a control group. In addition, the male-female ratio within and between experimental and control groups was approximately equal.

For the pretest, experimental subjects were instructed that the Department of Psychology and Sociology was conducting a research program to survey student feelings about gun control legislation. They were further told that after answering a survey questionnaire they would read an article on gun control written by a leading political scientist, and would then answer another questionnaire to see if they still felt the same. Control subjects were given essentially the same instructions except they were asked to remain silent for a period of time (the average time needed to read the communication) "in order to give further thought on the issue." This type of explanation for both control and experimental groups is likely to produce some change due to the demand characteristics (8) of the situation. However, any differences between groups should be a function of the independent variables, since all groups were being equally sensitized to change.

The measurement scale used in the present study was an ordered alternative, social judgment questionnaire, consisting of nine interval statements ranging from pro through neutral to anti on the issue of gun control legislation. Subjects mark the one statement that is most acceptable to them (most

acceptable position), any other acceptable statements (the number of other accepted statements plus the most accepted statement denotes the latitude of acceptance), the one most objectionable statement (most objectionable position), and any other objectionable statements (other objectionable statements plus most objectionable statement constitutes the latitude of rejection). The number of statements not marked as acceptable or objectionable in some degree defines the latitude of noncommitment. Thus, most acceptable and most objectionable positions denote position along the reference scale, while latitude scores reflect sizes of the areas of that scale. The statements used in the present study were as follows: (a) Gun control legislation is absolutely desirable for the welfare of the nation and its people. (b) Gun control legislation is extremely desirable for the welfare of the nation and its people. (c) Gun control legislation is probably desirable for the welfare of the nation and its people. (d) Gun control legislation seems somewhat desirable for the welfare of the nation and its people. (e) It is hard to decide whether gun control legislation is desirable or undesirable for the welfare of the nation and its people. (f) Gun control legislation seems somewhat undesirable for the welfare of the nation and its people. (g) Gun control legislation is probably undesirable for the welfare of the nation and its people. (h) Gun control legislation is extremely undesirable for the welfare of the nation and its people. (i) Gun control legislation is absolutely undesirable for the welfare of the nation and its people.

Subjects in the experimental groups read the communication immediately after answering the pretest social judgment questionnaire, and then answered the posttest social judgment scale immediately after reading the communication.

C. RESULTS

1. *Pretest Measures*

Pearson product-moment correlations were calculated for the pretest measures of the social judgment scales. Correlations were calculated across subjects between most acceptable position (MA), latitude of acceptance (LA), most objectionable position (MO), latitude of rejection (LR), and latitude of noncommitment (LNC). For the issue of gun control legislation, MA was significantly correlated with MO ($r = -.701, p < .001, N = 392$), LA was significantly correlated with LNC ($r = -.551, p < .001, N = 392$), and LR was significantly correlated with LNC ($r = -.858, p < .001, N = 392$). These correlations indicate that (a) the more extreme the own position (MA), the more extreme the most objectionable position; (b) the

larger the latitudes of acceptance or rejection, the smaller the latitude of noncommitment; and (c) the latitudes of acceptance and rejection are not related to each other ($r = .04$) except through the latitude of noncommitment.

2. Attitude Change

Position and latitude change scores were derived by subtracting pretest scores from posttest scores for each dimension of the social judgment scale. Change scores for most acceptable and most objectionable positions indicate shifts in position along the reference scale, while change scores for latitude dimensions indicate change in the sizes of the latitudes—not position. Chi-square contingency tests were performed to test the difference between communication conditions by frequency of change for the attitude dimensions. For the latitude of acceptance, a 3×3 contingency matrix with rows representing communication conditions and columns representing frequency of change (see Table 1) indicated a significant difference between communication conditions and frequency of change in the latitude of acceptance ($\chi^2 = 11.18$, $df = 4$, $p < .025$, $N = 392$). Differential communication effects (see components of Table 1) indicated significant differences between extreme and moderate condition ($\chi^2 = 9.85$, $df = 2$, $p < .01$, $N = 303$), and between moderate and control conditions ($\chi^2 = 8.18$, $df = 2$, $p < .02$, $N = 243$). No significant difference was found between extreme and control conditions ($\chi^2 = .20$, $df = 2$, $N = 238$). From the proportion of change within each communication condition (see Table 1) it can be seen that

TABLE 1
CHI-SQUARE TEST ON FREQUENCY OF CHANGE IN LATITUDE OF ACCEPTANCE
BY COMMUNICATION CONDITIONS (PROPORTIONS IN PARENTHESIS)

Communication	Change in latitude of acceptance		
	Decrease	No change	Increase
Extreme	21 (.14)	86 (.58)	42 (.28)
Moderate	6 (.04)	96 (.62)	52 (.34)
Control	12 (.13)	54 (.61)	23 (.26)

the extreme and control groups decreased their latitude of acceptance, while the moderate communication group increased their latitude of acceptance.

For most acceptable position, the 3×2 contingency matrix with columns representing a change-no change dichotomy was not significant ($\chi^2 = 4.43$, $df = 2$, $N = 392$). However, in comparing the combinations of extreme and moderate conditions against the control condition a small but significant

difference was found ($\chi^2 = 4.38$, $df = 1$, $p < .05$, $N = 392$) indicating that the frequency of change was greater for the two experimental conditions taken together (direction of change ignored). It must be pointed out that the 3×2 matrix fell just short of significance at the .10 level. Proportion of change within each group was (a) extreme, .46; (b) moderate, .47; (c) control, .34. In line with these changes and the small but significant changes in the collapsed matrix, it must be concluded that there was a slight change in the most acceptable position. A further check was made to ascertain the relationship between change in the latitude of acceptance and change in the most acceptable position ($r = .182$, $p < .001$, $N = 392$). While this correlation is statistically significant, the predictive efficiency of a correlation coefficient this small would be tenuous indeed, due to the conditions underlying the Pearson product-moment test. It should then be concluded that there is a differential process applicable to changing latitude of acceptance and own position—i.e., not all those who change their latitude of acceptance appear to be changing their most acceptable position, and *vice-versa*.

D. DISCUSSION

The proposition that attitudes can be changed by changing a latitude dimension, and without changing the most acceptable position was partially supported in the present study. Significant attitude change was found in the latitude of acceptance between the moderate communication group and the extreme and control groups. Possibly subjects receiving the moderate communication viewed it as giving support for their side while providing information about the opposing side. Subjects in the extreme communication group may have found the "extreme tone" of the communication offensive, thus reacting negatively (boomerang effect within the latitude of acceptance); while those in the control group may have found "sitting silently for further thought" intolerable, thus reacting to the situational variable.

Research dealing with sequentially two-sided communications (5, 9) indicates that subject awareness affects attitude change in that (a) one-sided communications are more effective than two-sided communications when the subject is aware of the experimenter's intent to change his attitude, and (b) the two-sided communication is more effective if the subject is unaware. Since subjects in the present study were aware that attitude change was sought, these findings might explain the slight change in own position found by taking both communications together; but leaves unanswered the question of why the significant, directional change in the latitude of acceptance, and the differential change between the latitude of acceptance and own position. Experimental

manipulation is required (and will be forthcoming) to compare two-sided sequential and two-sided mixed communications.

While the hypotheses in this study were not completely supported, it does appear that an attitudinal dimension other than most acceptable position can be changed. While further research is needed to confirm this conclusion, it hopefully allows for a conceptualization of a change away from the point fallacy in the interpretation of the construct attitude change. If attitude formation and change is a judgmental process, then judgmental changes in categories, as well as change in own position, must be considered valid indices of attitude change.

E. SUMMARY

While Sherif's approach of eliciting two positions and three latitudes provides for a richer analysis of attitudes, most research in attitude change continues to attempt to change only a single position (the point fallacy). The present study attempted to change a latitude dimension without changing the most acceptable position by use of extreme and moderate, two-sided, mixed communications on gun control legislation.

Pre- and postattitude measures were obtained on 392 male and female undergraduates, who received either an extreme, moderate, or no communication (control) experimental condition. The moderate communication produced an increase in the size of the latitude of acceptance, while the extreme communication produced a decrease. Overall, own position showed a small difference in comparison to the control group, but the correlation with change in the latitude of acceptance indicated considerable independence between the two.

These results justify a guarded optimism about further research designed to produce change in attitude dimensions other than a single point measure.

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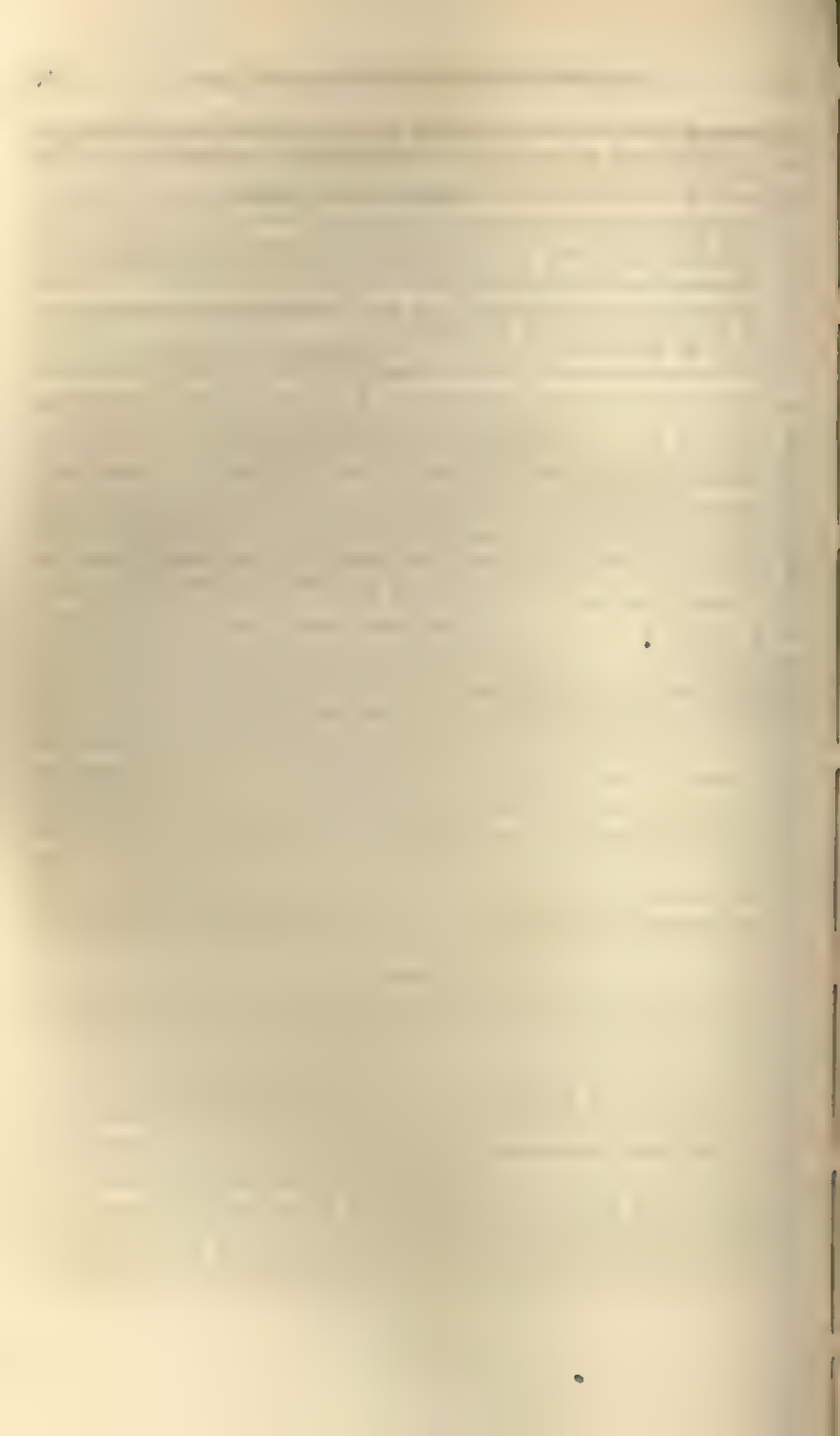
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400 Eagle Drive,

Apt. 107

Elk Grove Village, Illinois 60007



GENERALIZATION OF OPERANT CONDITIONING OF VERBAL OUTPUT IN THREE-MAN DISCUSSION GROUPS*¹

Center for Cross-Cultural Training and Research, University of Hawaii

KENNETH H. DAVID

A. INTRODUCTION

One of the first studies to apply verbal operant conditioning (VOC) procedures in a group situation was by McNair (3). He found that a tone, defined by the instructions as signifying approval, increased Ss' verbal output in an 18-person discussion group. Oakes, Droge, and August (4) investigated the effects of positive reinforcement and punishment on verbal output in a group discussion situation. They presented a light flash, with Ss being instructed that the flash indicated either psychological insight or a lack of insight, and the light (reinforcer) influenced the Ss' rate of verbalization. In a study by Bavelas, Hastorf, Gross, and Kite (1), groups of four men discussed three different problems. After discussing the first problem, Ss ranked each other on amount of talking, best ideas, guiding the discussion, and group leader. The S who ranked next to the bottom was selected as the Target S. During the second problem, Target Ss were reinforced for talking and punished for remaining silent, while the other three Ss were punished for talking, which led to a significant increase in both output and sociometric ranking of the Target S. The third problem was an extinction session, which resulted in a significant drop in both the output and sociometric ranking, although Target Ss' output and rankings remained significantly above their operant level. Bavelas *et al.* stated that the permanency of the effect and whether the effect would generalize to other similar situations was unanswered.

In the present study, the group discussion paradigm was utilized in order to investigate the parameters of generalization of VOC. The hypotheses to be tested were the following:

1. Verbal output of Target Ss would increase with the presentation of positive reinforcers for talking and punishment for silence.

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2. Later testing of reinforced Target *Ss* in new groups would show generalization of increased verbal output.
3. Later testing of Target *Ss* in new groups would show the reinforced Target *Ss* being rated as performing a greater degree of leadership function than nonreinforced Target *Ss*.
4. The degree of generalization of verbal output would be a function of time, with Target *Ss* retested one day later showing more generalization than Target *Ss* retested one week later.

B. METHOD

The Target *Ss* were 24 female volunteers from the introductory psychology course at the University of Hawaii. The *Ss* were assigned to three-man discussion groups on the basis of the times that they volunteered to participate in the experiment.

The *Ss* were seated around a small table in a soundproofed room. The room contained a table, three chairs, and three hooded panels each containing two signal lights. There was a one-way-vision window between the experimental room and *E*'s room. The hooded panel containing the two signal lights was situated on the table in front of each *S*, and the panels were designated North, South, and West so that each *S* could identify himself by the name of his own panel. Each panel contained a red and green signal light. The signal lights were controlled by *E* in an adjoining room with *E*'s panel buttons corresponding to *S*'s panel lights. A timer for each *S* was used in order that the total amount of time of talking for each *S* could be recorded. The *E* was equipped with monitor earphones in order that he would be able to hear the discussion and to flash on the panel lights at the appropriate times.

The *Ss* were met by *E* in a separate waiting room and escorted to the experimental room. They were positioned around the table according to the alphabetical order of their last name, with the first *S* seated before the North panel, the second *S* before the South panel, and the third *S* before the West panel.

The *Ss* were assigned to either a Reinforced (R) or Non-Reinforced (N-R) treatment, and each group met on three successive days for 30 minutes each day. The *Ss* who spoke the least amount of time in their respective groups were selected as Target *Ss* ($N = 24$), with 12 *Ss* tested under the R treatment and 12 *Ss* under the N-R treatment.

Written instructions were presented to the R groups at the beginning of Day 1, and to the N-R groups at the beginning of Days 1-3, in which *Ss*

were told that "The discussion should be conducted normally" and that "two social psychologists who are skilled in the process of group discussion will be listening to your discussion."

The R group received written instructions at the beginning of Days 2 and 3 in which Ss were told that "Whenever you make a contribution to the discussion which is helpful in facilitating the group process, your green light will flash on. When you behave in a way which will eventually hamper or hinder the group process, your red light will go on."

Day 1. On the first day, the conditions were the same for all the groups, with no reinforcement being presented, in order to establish the operant level of verbal output for each S. The Ss' output scores for the first day were determined according to the amount of time each S spoke during the 30-minute discussion, and Ss who spoke the least amount of time within their respective groups were selected as the Target Ss.

Day 2. On the second day, Target Ss under the R condition were reinforced (green light flashed) while they were talking and punished (red light flashed) whenever they were silent for more than one minute. The other two Ss (Non-Target Ss) were punished whenever they spoke for more than 45 seconds. The Ss under the N-R condition were neither reinforced nor punished.

Day 3. The conditions were the same as Day 2.

Day 4. The fourth session occurred either one or seven days after Day 3. Thus, one-half of the Ss were required to meet on four successive days, while the other half met on three successive days and one week later for the fourth day. On the fourth day, the Non-Target Ss who had participated in the three previous discussions were required to fill out a sociometric questionnaire and then they were dismissed. The Target Ss were assigned to new groups with Ss who had not participated in the first discussion groups. All the groups were presented the standard instructions that were given to the groups on Day 1. At the end of the discussion, all three Ss from each group were sent to separate rooms and asked to fill out a sociometric questionnaire. The Target Ss were required to fill out two questionnaires, one for the first discussion group (Days 1-3) and the other for the second group (Day 4).

The sociometric questionnaire, on which Ss ranked each other, consisted of the following questions: (a) Who would you say talked the most? (b) Who would you say had the best ideas? (c) Who would you say did the most to guide the discussion? (d) Who would you say was the group's leader? (e) Who would you say enjoyed the experiment the most? (f) Who would you say you liked the most?

C. RESULTS

In order to test for conditioning of verbal output of the Target Ss, the amount of time that the three Ss spoke was summed for each three-person group, and the Target S's score was expressed as a percentage of the amount of talking time. This ensured that the verbal output score of the Target S was in proportion to the total verbal output of the group; therefore, the use of percentages acted as a control for the varying degrees of silence within each group. Target Ss were originally selected on the basis of being the least verbal person within each group, and they showed a mean score of 17.25% of the total time spoken. In order to make the criterion scores more closely resemble a normal distribution, an arc sine transformation was performed. Hartley's test of homogeneity of variance indicated that the variances of the criterion groups were not significantly heterogeneous ($F = 6.15$, $df = 8/11$, $p > .05$).

Hypothesis A. A 2×3 analysis of variance was made of the transformed scores in order to test for conditioning of verbal output. This was a two factor design in which Days 1, 2, and 3 were administered to the same Ss, but with R vs. N-R administered to different Ss. There was a significant Days effect ($F = 13.49$, $df = 2/44$, $p < .01$) and a significant Days \times R interaction ($F = 9.37$, $df = 2/44$, $p < .01$). An analysis of the simple effects showed that there was a significant Days effect for the R group ($F = 20.93$, $df = 2/44$, $p < .01$), but no significant Days effect for the N-R group ($p > .05$). This indicates that the Target Ss under the R treatment showed a significant difference in verbal output between Days 1, 2, and 3, whereas Target Ss under the N-R treatment showed no significant difference. The Newman-Keuls method was performed to test the difference between Days 1, 2, and 3 for the R group. There was a significant difference between Days 1 and 2 ($p < .01$) and Days 1 and 3 ($p < .01$), but no significant difference between Days 2 and 3 ($p > .05$). This indicates that Target Ss showed a significant increase in verbal output from Day 1 to Day 2, and that this increase was maintained for Day 3.

Hypothesis B. In order to test for generalization of verbal output of the Target Ss under the R treatment, a $2 \times 2 \times 2$ analysis of variance was made. This was a three factor design in which both of the C treatments (Day 1 vs. Day 4) were administered to the same Ss, but with both A treatments (R vs. N-R) and both B treatments (One Day vs. One Week) administered to different Ss. For the C treatment, Day 1 was the first day of testing in the initial group (First Group), and it was a measure of the operant level of Target Ss; Day 4 was the fourth day of testing in which Target Ss

participated in a newly formed group (Second Group). For the A treatment, the R Target Ss had been reinforced during Days 2 and 3, while the N-R Target Ss had not been reinforced. For the B treatment, One Day means that Target Ss were tested in the Second Group one day after Day 3, and One Week means that Target Ss were tested in the Second Group one week after Day 3. The only significant difference occurred between Day 1 (First Group) and Day 4 (Second Group), in which $F = 22.77$, $df = 1/20$, $p < .01$. Therefore, Target Ss showed a significant increase in verbal output when they were placed in the Second Group, regardless of whether they had been reinforced or nonreinforced during Days 2 and 3, or whether they were placed in the Second Group one day or one week after Day 3.

Hypothesis C. A $2 \times 2 \times 2$ analysis of variance was made of the sociometric scores of Target Ss in order to test for the influence upon leadership functions. This was a three factor design in which both of the C treatments (Days 1-3 *vs.* Day 4) were administered to the same Ss, but with both A treatments (R *vs.* N-R) and B treatments (One Day *vs.* One Week) administered to different Ss. There was a significant C effect ($F = 11.52$, $df = 1/20$, $p < .01$) and a significant $A \times C$ interaction ($F = 6.29$, $df = 1/20$, $p < .05$). An analysis of the simple effects indicated that the N-R Target Ss showed a significant decrease in sociometric rank when comparing their performance during Days 1-3 with Day 4 ($F = 8.71$, $df = 1/20$, $p < .01$). Thus, Target Ss under the N-R treatment were rated as performing more leadership functions in the Second Group (Day 4) than in the First Group (Days 1-3). There were no other significant simple effects ($p > .05$). The Target Ss' sociometric score used in the analysis was the summed rankings of the first four questions in the sociometric questionnaire, with the use of the combined ratings of the two Non-Target Ss.

D. DISCUSSION

Hypothesis A was supported by the results; that is, Target Ss under the R condition showed a significantly greater verbal output than N-R Target Ss. The mean verbal output of R Target Ss for Day 1 (Operant Level) was 16.5%, Day 2 was 29%, and Day 3 was 28%. The N-R Target Ss showed a mean verbal output score for Day 1 (Operant Level) of 18%, Day 2 was 18%, and Day 3 was 22%. The analysis of the results indicated that the R condition was effective in increasing verbal output during Day 2; however, the continued presentation of the reinforcer during Day 3 did not result in an additional increase in verbal output.

Hypothesis B was not supported by the results; that is, R Target Ss (mean

verbal output of 29% for Day 4) did not show significantly greater verbal output than N-R Target Ss (mean verbal output of 36% for Day 4) in the Second Group (Day 4). Target Ss showed a significant increase of verbal output from the First Group (Day 1) to the Second Group (Day 4), for both the N-R and R treatments; however, the N-R and R Target Ss did not significantly differ from each other on Day 1 or Day 4. These results indicate that the initially least verbal member of a three-person discussion showed an increase in verbal output when he participated in a newly formed group. The Second Group (Day 4) consisted of a Target S who had previously spent three days in the same sort of discussion group and two Ss who had not previously been in any such discussion group. The results indicate that the increase of verbal output of the Target Ss in the Second Group was a result of their previous experience in the experiment, without the prior reinforcement acting as a contributing factor.

Hypothesis C also was not supported by the results; that is, R Target Ss did not show greater leadership function than N-R Target Ss in the Second Group. The R Target Ss showed no significant difference between the First Group and Second Group, whereas the N-R Target Ss showed a significant increase in leadership function from the First Group to the Second Group. The results of the sociometric scores are consistent with the results of the verbal output scores; that is, there were no significant differences between the R and N-R Target Ss in the Second Group for either the sociometric scores or verbal output scores. Also, for the N-R Target Ss, the increase in verbal output from the First Group to the Second Group was consistent with the increase in leadership function from the First Group to the Second Group.

Hypothesis D was not supported by the results; that is, the degree of generalization of verbal output and sociometric rankings was not a function of time, as Target Ss who were retested one day later showed no significant difference from Target Ss retested one week later. These results indicate that under a N-R treatment, the initially least verbal member of each group tended to show an increase in verbal output when he participated in a newly formed group, regardless of whether he was placed in the Second Group one day or one week after participating in the First Group. Since there was no significant difference between One Day and One Week, the effect of the previous experience of the Target Ss appears to have been effective over a period of time of at least one week.

The results appear to be consistent with a study by D'Zurilla (2), in which he selected Ss from large classroom discussion groups (19-25 Ss) to

participate in small discussion groups (6 Ss). In the small discussion groups Ss received either persuasion, praise, or neutral treatments, after which they were returned to the large classroom groups. All three treatments resulted in significantly greater verbal output than the control Ss (Ss who remained in the large classroom groups); therefore, there were no significant differences between the three treatments.

The results indicate that there are two possible procedures that can be used to increase the level of an individual's verbal output in a discussion group. One procedure would be to establish the proper reinforcement contingencies for the Target S within a discussion group, and the other would be to give the Target S prior experience in similar discussion groups.

E. SUMMARY

This was a study of the generalization of verbal operant conditioning with the use of a group discussion paradigm. Female volunteers were assigned to either a Reinforced or Non-Reinforced group, and Ss met on four days for 30 minutes each day. The Ss who spoke the least within each group were selected as Target Ss ($N = 24$). On Days 2 and 3, 12 Reinforced Target Ss were reinforced for talking and punished for silence, while 12 Non-Reinforced Target Ss were the control group. On Day 4, all Target Ss were placed in new groups, which occurred either one week or one day after Day 3. The Reinforced Target Ss showed an increase in verbal output ($p < .01$) for Days 2 and 3. Reinforced and Non-Reinforced Target Ss increased the same amount in verbal output and sociometric ranking of leadership function when going from the original discussion group (Day 1) to a newly formed group (Day 4), indicating that Ss' prior experience with discussion groups accounted for the increase in talking.

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Honolulu Model Cities

2828 Paa Street

Honolulu, Hawaii 96819



THE EFFECT OF UNDERLYING SITUATIONAL CHARACTERISTICS ON THE RISKY SHIFT PHENOMENON*¹

Department of Psychology, Texas Christian University

ROBERT BLITZ AND DONALD F. DANSEREAU

A. INTRODUCTION

Studies of group decision processes have shown that the group decisions are generally *riskier* than the average decisions made individually prior to group discussion. It has been found that this "risky shift" apparently occurs with both sexes (9), graduates in business management (8), undergraduates in liberal arts (11), middle-level managers in the Sloan Executive Training Program at M.I.T. (5), and with people risking real monetary and aversive physiological consequences (4). From these data Kogan and Wallach (4, p. 242) conclude, "The phenomenon of a group-induced shift toward enhanced risk taking on this procedure (dilemmas-of-choice questionnaire) seems to be consistent and enduring." It should be noted, however, that the vast majority of experiments in this area have used primarily American Ss. It is, therefore, possible that the "shift to risk" is primarily a phenomenon associated with the American culture. In the remainder of this article it will be tacitly assumed that any generalizations about the phenomenon will extend only to American Ss.

Proposed explanations of the cause of the risky shift include a responsibility diffusion hypothesis by Wallach *et al.* (12), which proposes that members of a group do not feel as responsible for the consequences of the outcome of the decision as do individual decision makers; Flanders and Thistlethwaite's (2) problem familiarity hypothesis which suggests that greater knowledge of the problem causes a shift to risk; and Brown's (1) notion that risk is a cultural value and that information is disclosed during discussion indicating what the group regards as a risky response. In other words, people like to think of themselves as being riskier than average, and when they find out they are not,

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they change their decisions. This last hypothesis has been investigated by Rabow *et al.* (7). They report a conservative shift with a procedure similar to that used by Kogan and Wallach, but different problems designed to elicit both riskiness and conservatism as cultural values. Nordhøy (6) also produced problems which led to a conservative shift following group discussion.

With these recent results throwing some doubt on the pervasiveness of the risky shift, an investigation of problem characteristics leading to a risky or conservative shift is necessary. Generalizing from the problems that Nordhøy wrote, Brown (1, p. 706) states that conservative problems *might* involve the following value judgment: "One should be cautious in making a decision such that the stake involves the vital interests of others." The present experiment is concerned with further amplifying and objectifying this hypothesis.

A pilot study using five of Kogan and Wallach's dilemmas-of-choice problems (3) was run to delimit the types of statements used in group discussions. Analysis of the discussions revealed that certain arguments were used consistently to appeal for either a risky or conservative shift. These arguments include the effect of the decision on others, the importance of the consequences to the hypothetical individuals involved [Brown (1) refers to this as Saliency], the amount of influence the central figure has on the success of the alternatives after a decision had been made, and the degree of identification of the participants with the individuals in the problem. There were other elements discernable, but their effect seemed to be weaker in the group discussion.

As a result of this subjective analysis, two sets of problems were written which varied the first three dimensions or characteristics, mentioned above, and attempted to hold the last one constant. Each set consisted of eight problems containing combinations of high and low Effect on others (E), Saliency (S), and Influence (I). The following problem summaries and their associated dimensions will serve as example of the types of problems used:

1. An instructor and his student are in a plane with landing gear trouble. They can bail out, which might endanger people on the ground, or they could risk a crash landing (S-high, I-high, E-high).

2. A college graduate can take a job from a company with an acceptable salary or he can start a business of his own at the risk of going deeply into debt if it fails (S-high, I-high, E-low).

3. A senior, who is campus newspaper editor, can take the administration's warning and not publish any more controversial articles, or he can publish an article attacking the speaker policies of the university and risk expulsion and the draft (S-high, I-low, E-low).

4. A college student inherited \$1,000 which he can invest in a high interest

bond or patent proceedings on a friend's gadget which would have high return in royalties, greater than the bond interest, if the patent is granted (S-low, I-low, E-low).

All 16 problems were rated by 28 undergraduate students enrolled in Introductory Psychology classes at Texas Christian University. Following familiarization with each problem, Ss were asked to rate (relative to the other problems) four properties of the problem situation on a line scale 10 centimeters long. These properties were

1. How important to the individual(s) are the consequences of the risky decision? (Salience).

2. How easily can you imagine yourself or someone you know well in this situation? (Identification).

3. Once the individual has made his decision, what amount of influence does he have over the success or failure of the decision? (Influence).

4. How much does the individual's decision affect the other people mentioned in the problem? (Effect on others).

The average ratings for each of the problems were in line with *a priori* expectations, although the range of the Salience ratings was not as great as expected. The attempt to keep the Identification rating constant over problems was successful; the variance was very small relative to the other dimensions.

In order to determine the effects of the three of these dimensions (Effects on others, Salience, and Influence) on the "shift to risk" phenomenon, an experiment utilizing the dilemmas-of-choice questionnaire was run.

B. METHOD

1. Subjects

Forty undergraduate students enrolled in Introductory Psychology at Texas Christian University were given two hours of experimental credit for participating in this experiment. Eight groups of five Ss were formed as Ss made appointments for the experiment. Each group was heterogeneous with respect to sex, and was run in isolation.

2. Stimuli

Each group received a booklet consisting of eight of the 16 problems used in the pilot study. Four of the groups received one set of eight problems representing all values along each of the three dimensions, while the other four groups received the other set of eight problems. Since each group of Ss

in this experiment was exposed to all levels of the three variables, each acted as its own control. The problems were presented as descriptions of central figures faced with the decision between two courses of action, one more desirable, but with a lower probability of occurrence. The *Ss* were asked to indicate the minimum odds of success they would require (from one out of 10 to nine out of 10) before recommending that the more attractive alternative be chosen. The odds were defined as the frequency of success in 10 trials. The *Ss* were reminded that they were not trying to estimate the "actual" probabilities of a particular situation occurring, but rather the lowest probabilities they would require to recommend the risky alternative.

After each problem there was this question, "What are the lowest chances of (statement of the successful outcome of the risky alternative) that you would accept and still advise Mr. Miller to (statement of the risky course of action)?"

The complete range from one to 10 was chosen, rather than the typical 1, 3, 5, 7, 9, 10 scale (9), to allow *Ss* to make finer discriminations.

3. Procedure

The experiment involved three tasks:

Task I: *Ss* were asked individually to read each problem and rate the acceptable probability of success (from 1/10 to 9/10) of the risky alternative. Approximately three minutes per problem was allowed for this task (Pre rating).

Task II: *Ss* were then asked to discuss each problem with their group (five *Ss*) and arrive at a unanimous decision concerning the appropriate level of risk (Group rating).

Task III: *Ss* then rerated the problems individually (Post rating).

C. RESULTS

The Pearson product-moment correlation between the average Pre minus Post score and Pre minus Group score (both are measures of shift in acceptable risks as a result of group discussion) for each group was .79. The magnitude of this correlation, which is consistent with that found in other studies in this area, appeared to be sufficient to warrant the analysis of only one of the dependent measures. The Pre minus Post measure was chosen, since the group decisions were often produced by implicit averaging rather than consensus. The correlation matrix for the three manipulated dimensions and Pre minus Post scores is presented in Table 1. The high negative correlation to $\text{Pre} \times \text{Influence}$ indicates that the active participation in the

TABLE 1
INTERCORRELATIONS MATRIX

Variable	Salience	Influence	Effect on others
Pre	— .5084*	+ .5134*	— .1578
Pre minus Post	— .2517*	+ .0047	— .1358
Salience	X	— .2674	— .1853
Influence	X	X	— .0517

Note: A positive correlation with the Pre or Pre minus Post scores implies that risk or shift to risk increases as the independent variable increases.

* p is less than .05.

outcome of the riskier course of action corresponds to willingness to take a greater risk. Ss indicated in the discussions that skill or high goal motivation were considered separately from probability of success. A sample argument, "He graduated with honors so I think he will succeed in running his own business. I'd say 5 out of 10."

The negative correlation of Pre \times Salience implies that high Salience is accompanied by greater caution on the initial measurement. The significant negative correlation of Pre minus Post \times Salience ($p < .05$) suggests that high Salience is related to a conservative shift after discussion. The high correlation between the Pre Discussion score and Salience obscures the strength of this apparent conservative shift. High Salience frequently scores at 8, 9, or 10 in which case the maximum conservative shift is 2. If there had been a greater range in Salience, this would also have affected the shift to risk. This scoring truncates the extent of the shift at both ends of the Salience scale, but since the Salience is only medium to high, the questionnaire is biased toward an overall risky shift. The same argument may be reversed and applied to the Influence dimension. A bias towards a conservative shift is imposed by the high positive correlation of Pre \times Influence. The other correlations are not significant at the .05 level.

Because of the small N , the strengths of all the effects are masked if there is one individual that takes a deviant stand on the basis of prejudice or some other form of extrastimulus information. A nonparametric approach to the data appears to be appropriate under these circumstances. Table 2 shows the number of groups shifting in the conservative or risky direction on the bases of their average Pre minus Post score. As can be seen from these tables the only major difference is between high and low Salience. As a result of the examining of the interactions between Salience and the other dimensions, it appears that the combination of high Salience, low Influence, and high Effect leads to frequent shifts in the conservative direction. A t test comparing the Pre minus Post scores (group averages) of this condition (S-

TABLE 2
NUMBER OF GROUPS EXHIBITING EITHER A RISKY SHIFT OR A
-CONSERVATIVE SHIFT (PRE MINUS POST)

Variable	Salience	Influence	Effect on others
<i>Risky Shift</i>			
High	15	18	17
Low	23	20	21
<i>Conservative shift</i>			
High	16	12	12
Low	6	10	10

Note: All cells have a maximum possible frequency of 32.

high, I-low, E-high) and slight deviations from it (S-high, I-low, E-low; and S-high, I-high, E-high) with the group averages in the remaining conditions yielded a significant difference ($p < .10$).

D. DISCUSSION

Situations rated as having high Salience for the central figure(s) appeared to elicit a conservative shift more often than a risky shift after group discussion. Relatively low Salience problems, however, produced shifts predominately toward greater risk. At a more detailed level, the combination of high Salience, high Effect, and low Influence appeared to be most conducive to producing a conservative shift. The first two of these conditions provide support for Brown's hypothesis about the type of problem that would induce conservatism (see the Introduction). A reasonable conclusion is that group discussion did not automatically lead to a riskier decision. The types of problems about which decisions were to be made weighed heavily on the outcome of group processing.

The findings of this experiment seem to present difficulties for explanations of this "shift" phenomenon based on responsibility diffusion, risky leadership, and increased familiarity. However, the notion that the problems evoked certain societal values regarding riskiness or conservatism for certain situations, and that the group discussion clarified the quantification of these values, is still a viable hypothesis and warrants further exploration. Support for this hypothesis is also found in the group discussions of the problems. In most groups the dimensions were appealed to in arguments for shift in the predicted direction. That is, high-Salience, low-Influence, and high-Effect on others were generally reflected in arguments for conservatism. For example, in comparing Problem 3 (concerning the back operation) with Problem 7 (the heart operation), one S commented that the latter was more important and

should be marked higher because the individual's family would be affected. However, some problems were sufficiently ambiguous that a different emphasis allowed the same dimensions to be used as arguments for a risky decision. One *S* stressed the friendship (Effect on others) in Problem 4 as an argument for a low probability. Thus, although the problem was generally rated low-E, considering only the student's return on his investment, this new emphasis made it high-E. Because of this perceived structure of the problem (i.e., positive consequences for the friend resulting from a risky decision), the argument was risky.

E. SUMMARY

A study was reported which dealt with the impact of three dimensions underlying dilemmas-of-choice passages on the "shift to risk." Each of the passages contained combinations of extremes of the following three dimensions:

1. Degree to which the central figure's decision affects others (Effect on others).

2. Amount of influence the central figure has over the course of action following his decision (Influence).

3. Importance of the decision to the individuals involved (Salience). These passages were presented to the *Ss* in the standard "risky shift" paradigm (9, 10).

The results of this study place some doubt on the pervasiveness of the "risky" shift. It appears that only with problems of low Salience did a shift to greater risk occur consistently. As Salience increased, and as ability of the central figure to influence the outcome decreased, and as the effect of the outcome on others increased the propensity to shift to risk decreased. In fact, with these problems, the number of groups going conservative exceeded the number going risky by a relatively large margin.

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Texas Christian University

Department of Psychology, Box 29880-A

Fort Worth, Texas 76129

ETHNIC STEREOTYPES: AN ALTERNATIVE ASSESSMENT TECHNIQUE, THE STEREOTYPE DIFFERENTIAL*¹

University of Western Ontario and Philippine Normal College

R. C. GARDNER, D. M. KIRBY, F. H. GOROSPE, AND A. C. VILLAMIN

A. INTRODUCTION

The technique traditionally used to assess ethnic stereotypes was introduced by Katz and Braly (10) and requires Ss to select from a list of attributes those which they feel best characterize a particular ethnic group (8, 9, 10). The stereotype about any group is defined in terms of those attributes chosen most frequently; thus in addition to referring to an individual's beliefs about a group, the concept of the ethnic stereotype implies consensual beliefs (12) or social norms (9). The Katz and Braly technique allows an investigator to identify attributes chosen most frequently by a sample of individuals to describe an ethnic group, and from this to infer the nature of the stereotype in the community. It does not, however, permit him to investigate individual differences in the tendency to subscribe to this stereotype. This shortcoming is significant in that it prevents the social scientist from investigating important problems associated with ethnic stereotypes.

Although theorists often associate stereotypes with prejudice and illogical thought processes (1, 2, 4), the absence of a measure of individual differences of the tendency to adopt stereotypes precludes any definitive statement of such a link. Without such a measure, it cannot be demonstrated that some Ss do stereotype, while others do not, or that stereotypes exist because a subgroup of the sample tend to agree on most traits ascribed to the ethnic group concerned. An individual difference measure of the tendency to ascribe particular traits to an ethnic group is clearly required before such generalizations can be based on empirical findings.

Recently (4, 5, 6, 7) a new technique, the Stereotype Differential, has been developed to study individual differences in the tendency to adopt ethnic

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stereotypes as consensually defined. The Stereotype Differential requires *Ss* to rate ethnic group labels on a series of bipolar trait-descriptive adjectival scales. Stereotypes are defined, as in studies employing the Katz and Braly technique, in terms of agreement or consensus that a particular attribute characterizes a particular ethnic group and is indexed in terms of extreme polarity of ratings. This polarization is assessed by means of the *t* statistic (see 4, 5, 6, 7), which tests for significant departure of mean ratings from a neutral value. The stereotype is defined in terms of those 10 or 12 attributes (the number is arbitrary) for which consensus is greatest. Once the stereotype is thus identified, the individual's reactions on the stereotype scales can be investigated to determine correlates of the tendency to adopt the stereotype.

The purpose of the present investigation was twofold. First, it was felt necessary to compare the Stereotype Differential with the Katz and Braly method to ensure that the stereotypes identified with this new technique are comparable empirically, as well as conceptually, with those obtained with the traditional method. Otherwise generalizations based on a use of the Stereotype Differential could be said to be due to its unique measurement operations. Once their comparability has been established, questions concerning individual differences in stereotyping can be answered. The second purpose of this study, then, was to answer the question of whether *Ss* who stereotype one group also stereotype others. Previous research (5, 7) has demonstrated that the stereotypes of single ethnic groups are largely unitary in that *Ss* who adopt one part of the stereotype tend to adopt it all, but the generality of stereotyping (i.e., do *Ss* who stereotype one group stereotype others?) has not yet been investigated.

B. METHOD

1. Subjects

Ss for this study were 197 undergraduate and graduate education students at the Philippine Normal College, Manila, Republic of the Philippines. Ninety-seven *Ss* completed a Katz and Braly type of stereotype assessment task, while the remaining 100 *Ss* completed the Stereotype Differential version.

2. Materials

The Katz and Braly technique presented *Ss* with nine ethnic group labels, *Americans, Canadians, Chinese, Filipinos, Germans, Japanese, Jews, Russians, and Spaniards*, and 110 attributes. The attributes were presented in alphabet-

ical order. Ninety of the attributes were common to those used in the Stereotype Differential; the other 20 were presented as filler items.²

The Stereotype Differential presented Ss with the same nine ethnic group labels. Each label was presented on separate pages followed by 45 semantic differential type scales. For each label, the scales were presented in a different random order, and the labels were presented in different random orders to the Ss. The instructions were similar to those described by Osgood, Suci, and Tannenbaum (11), except that they were modified to refer to ethnic groups.

3. Procedure

The Ss were tested in different groups. Ss presented with the Katz and Braly format were instructed to read through the list of 110 attributes, and to select for each ethnic group label, at least five attributes which they felt best characterized that group. Ss given the Stereotype Differential were required to rate each ethnic group label on each scale. All testing was conducted in English, the language of instruction in Philippine elementary and secondary schools, as well as at the Philippine Normal College.

C. RESULTS AND DISCUSSION

The stereotypes obtained by the Katz and Braly technique (see Table 1) were determined in the usual manner by selecting for each label the 10 attributes chosen most frequently. The stereotypes thus obtained are indicated in Table 1. It does not seem worthwhile to discuss in detail the stereotypes obtained (these are presented in the tables); nevertheless, since the Ss were Filipino teachers and future teachers, the stereotypes are of interest because they reflect consensual views held by a group of educators in an important center in South East Asia. Consider, for example, the stereotype expressed about Americans. The 10 attributes chosen most frequently varied from 74% to 30% ($\bar{X} = 44.7\%$) and emphasize the democratic and progressive side of the American culture. One could imagine that these Filipinos respect Americans, a significant finding in view of the current concern about American involvement in the Far East.

The stereotypes obtained with the Stereotype Differential (also, see Table 1) are generally quite similar to those obtained with the Katz and Braly

² These 20 items were not included in the data analysis in order to facilitate comparison of the two techniques. Their exclusion does not materially influence the generalizations made. Copies of all items are available from the senior investigator.

TABLE 1
STEREOTYPES OF NINE GROUPS AS ASSESSED BY THE KATZ AND BRALY METHOD (K-B)
AND THE STEREOTYPE DIFFERENTIAL (SD)

K-B	SD	K-B	SD	K-B	SD
<i>Americans</i>		<i>Canadians</i>		<i>Chinese</i>	
democratic	punctual	friendly	loyal	businesslike	businesslike
adventurous	democratic	democratic	clean	hardworking	ambitious
punctual	progressive	fair	intelligent	dirty	hardworking
modern	ambitious	peaceful	resourceful	communitistic	resourceful
scientific	modern	efficient	systematic	nationalistic	intelligent
athletic	adventurous	athletic	practical	enterprising	adventurous
progressive	wealthy	adventurous	ethical	adventurous	punctual
inventive	musical	generous	generous	patient	enterprising
ambitious	athletic	hardworking	hardworking	humble	systematic
friendly	scientific	enterprising	punctual	traditionalistic	confident
<i>Filipinos</i>		<i>Germans</i>		<i>Japanese</i>	
hospitable	friendly	scientific	inventive	progressive	ambitious
imitative	democratic	inventive	strong	inventive	inventive
emotional	religious	intelligent	ambitious	hardworking	scientific
friendly	intelligent	ambitious	efficient	courteous	efficient
courteous	romantic	aggressive	hardworking	nationalistic	practical
religious	artistic	strong	intelligent	athletic	intelligent
democratic	peaceful	musical	loyal	businesslike	resourceful
ambitious	ethical	proud	scientific	clean	businesslike
nationalistic	musical	warlike	systematic	ambitious	hardworking
optimistic	imitative	resourceful	strict	resourceful	adventurous

TABLE 1 (Continued)

K-B	SD	K-B	SD	K-B	SD
<i>Jews</i>		<i>Russians</i>		<i>Spaniards</i>	
religious	hardworking	scientific	intelligent	religious	religious
adventurous	moral	communitistic	aggressive	romantic	musical
hardworking	loyal	inventive	scientific	arrogant	ambitious
shrewd	ethical	warlike	ambitious	musical	artistic
traditionalistic	efficient	aggressive	progressive	proud	romantic
backward	ambitious	ambitious	athletic	cruel	clean
loyal	patient	disciplined	adventurous	lazy	moral
peaceful	friendly	intelligent	hardworking	emotional	strict
aggressive	strong	strong	communitistic	loyal	loyal
nationalistic	religious	progressive	inventive	strict	scientific

Note: Mean percentages and mean absolute *ts* were, respectively, Americans, 44.7 and 25.57; Canadians, 22.0 and 12.18; Chinese, 29.4 and 11.08; Filipinos, 40.2 and 14.78; Germans, 25.8 and 16.14; Japanese, 30.1 and 15.48; Jews, 16.9 and 8.11; Russians, 34.2 and 16.37; Spaniards, 26.8 and 10.57.

technique.³ In fact, comparing the traits yielded by the two methods, the percentage agreement is 80%, 70%, 50%, 50%, 40%, 40%, 40%, 30%, and 20% for Americans, Russians, Germans, Japanese, Filipinos, Spaniards, Chinese, Jews, and Canadians, respectively. Furthermore it seems obvious that the two techniques provide more similar assessments where the stereotypes are more consensual. A measure of the consensus of each stereotype is afforded by calculating, with the data from the Katz and Braly technique, the mean percentage choosing the 10 attributes; a higher percentage indicates more agreement in the stereotype. The rank order correlation between these percentages and the percentage agreement between the two techniques was .73 ($p < .05$), indicating that the two techniques resulted in more similar assessment where in fact the stereotypes were more consensually defined.

A more direct measure of the similarity of the assessments of the two techniques is to compare reactions to each group over all scales. The t statistic calculated from the Stereotype Differential for each group/scale combination indexes the extent to which a particular adjective is ascribed by the group of S s to each ethnic group. A comparable measure is also provided in this study from the Katz and Braly technique, by subtracting the frequency of S s choosing one attribute from the frequency choosing its bipolar opposite. The correlations between these two indices were .87, .75, .75, .66, .77, .83, .44, .80, and .66 ($df = 43$, $p < .01$ in all cases) for the labels Americans, Canadians, Chinese, Filipinos, Germans, Japanese, Jews, Russians, and Spaniards, respectively. These results strongly support the conclusion that the two techniques provide very comparable assessments.

Consideration of the two techniques suggests furthermore that the operational definition of stereotypes provided by the Stereotype Differential more closely approximates the conceptual definition of ethnic stereotypes as consensual beliefs. With the Katz and Braly technique, the stereotypes are defined merely in terms of the most frequently chosen attributes, and thus could be determined by a small proportion of the sample. With the Stereotype Differential, however, the stereotypes are defined in terms of relative agreement within the sample that an attribute defined by one or the other pole is perceived as characteristic of the group. The t statistic reflects this relative agreement and uses the data from all subjects. Subjects who disagree have as much weight in determining the stereotype as those who agree, a seemingly important requirement if stereotypes are defined as consensual beliefs (12) or social norms (9).

³ The t statistics needed to define the stereotype on the Stereotype Differential were computed by means of a computer program (3) written for this purpose.

The term "Stereotype Differential" has been used to refer to this technique in order to emphasize that although it employs the semantic differential format, the characteristics of the scales, the task facing the subjects, and the purpose underlying the use of this technique are sufficiently different to distinguish the two. In the present instance, the scales involve bipolar trait descriptive adjectives, and *Ss* are required to characterize various ethnic groups. The results obtained can be viewed as ethnic stereotypes by virtue of their comparability with those obtained by the Katz and Braly method. Finally, the purpose in using this technique is to identify ethnic stereotypes while still permitting an index of individual differences in the tendency to ascribe a particular trait to a group.

Previous studies using this technique (5, 7) have factor analyzed ratings of single ethnic group labels, along with various attitude measures. In each analysis, two major independent factors isolated were an Attitude factor and a Stereotype factor. The composition of the stereotype factors differed from one analysis (or ethnic group label) to another but were identical in that they were defined by the most polarized scales for that particular ethnic group label. That is, a significant determinant of ratings of ethnic group labels on trait descriptive scales was the tendency to agree with the majority of the group that particular traits are applicable to a given ethnic group. One implication of these findings is that although the stereotype about an ethnic group reflects a community's beliefs concerning traits applicable to that group, individuals differ in the extent to which they adopt this stereotype. This tendency to stereotype a specific group was independent of attitudes toward that group (5, 7), but was related to authoritarianism (7). Because of this, it is reasonable to hypothesize that the tendency to adopt the stereotype about an ethnic group is a general phenomenon characteristic of some individuals' reactions to all ethnic groups.

In order to test this hypothesis concerning the generality of stereotyping, the data from the subjects who completed the Stereotype Differential were reanalyzed. For each *S*, one score was obtained for each label indicating his total rating on the 10 scales contained in the stereotype as defined in Table 1. These scores were intercorrelated; the correlation matrix is presented in Table 2. Examination of Table 2 indicates that in general the correlations are significant, suggesting that individuals who adopt the stereotype of one group tend to adopt the stereotype of other groups. The one clear exception noted in the matrix concerns stereotypical reactions to Filipinos which are generally unrelated to stereotypical reactions to the other groups. Since the *Ss* were Filipinos, the generalization suggested by the entire matrix of correlations is

TABLE 2
CORRELATIONS AMONG STEREOTYPE SCORES FOR NINE GROUPS

	1	2	3	4	5	6	7	8	9
1. Americans	x	.34**	.24*	.19	.46**	.38**	.20*	.36**	.48**
2. Canadians		x	.26**	.01	.51**	.39**	.50**	.24*	.44**
3. Chinese			x	.15	.39**	.14	.37**	.14	.26**
4. Filipinos				x	.03	-.02	-.01	.34**	.21*
5. Germans					x	.46**	.50**	.36**	.41**
6. Japanese						x	.36**	.29**	.38**
7. Jews							x	.18	.30**
8. Russians								x	.19
9. Spaniards									x

* $p < .05$.

** $p < .01$.

that Ss who stereotype one outgroup tend to stereotype all outgroups, but that this generality of stereotyping does not include the ingroup. This finding represents the first published account documenting the notion of a stereotyper as an individual who tends to stereotype most ethnic groups. Further research is required to explain individual differences in this respect, but the above results suggest that the dynamics underlying stereotyping of outgroups will differ from those underlying the tendency to stereotype the ingroup.

D. SUMMARY

The study presented the stereotypes of Filipino students about nine ethnic groups as assessed by the Katz and Braly technique and the Stereotype Differential. The results indicated that the two techniques provide comparable assessments. The Stereotype Differential, however, has an added advantage in that it permits an individual difference measure of the extent to which subjects adopt the stereotype. A further analysis of this index indicated that subjects who stereotype one outgroup tend to stereotype others.

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Department of Psychology
Middlesex College
The University of Western Ontario
London 72, Canada



ATTRIBUTION OF PERSON CONCEPTS BY ROLE ACCESSIBILITY AND INTERACTION OUTCOMES*

University of Tulsa

JOHN C. TOUHEY

A. INTRODUCTION

The acts-to-dispositions model (1) suggests that observers will attribute person concepts to others when their behaviors depart from prescribed roles. By the ascription of trait words, observers attempt to identify dispositional rather than situational antecedents as explanations of behavior, in order to predict and manage social interactions.

The acts-to-dispositions model has been tested in a number of contexts (2, 3, 4), and the findings have provided substantial support for the hypothesis that role discrepant behaviors are perceived as entitlements for personality attributions. The present study differs from earlier studies in two aspects. First, it examines dispositional attributions from the accessibility of additional role concepts that may resolve discrepant behaviors. In earlier studies it was unclear whether Ss attributed trait words as an attempt to identify dispositions or because person concepts might imply the existence of role concepts that resolve discrepant behaviors. Second, the present study examines the favorability of outcomes anticipated by the observers as a determinant of dispositional ascription. Research on interaction tactics (5) has consistently shown that agents who mediate rewards define their actions as the consequence of their personal dispositions, but that punishments are justified in terms of roles and other concepts of situational causality. In order to construct an interaction framework, however, individuals must question such claims by attributing punishments to the dispositions of others, but rewards to the roles of their incumbents.

The proposed theory suggests, then, that much social interaction, in North American culture at least, may be understood as a process of negotiation between divergent perceptions of the cause of behavior. If many individuals attribute their rewarding behaviors to their personal dispositions and their punishing behaviors to their situations, then minimal social interaction re-

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quires that some actors must compromise their private definitions of behavioral causes in order to sustain a working consensus with others.

To test the validity of these ideas a number of North American college students listened to a speaker who advocated either rewarding or punishing policies. The speaker then attempted to explain his advocacy as a consequence of his personal dispositions, his prescribed role requirements, or as a combination of the two causes.

B. METHOD

During a recent session of the Nevada State Legislature, it was proposed to lower the voting age to 18. In the ensuing period of controversy, a number of legislators were invited to speak directly to Nevada students at high schools and colleges throughout the state. Since the proposed reduction in voting age did not appear to generate a large consensus among Nevada students, the present study substituted the issue of compulsory R.O.T.C., a practice to which over 90% of all University of Nevada students are strongly opposed.

The Ss were 60 male undergraduates enrolled in introductory psychology classes at the University of Nevada, Reno. Ss were run in groups of 10. Each group was introduced to Mr. Iverson, a middle-aged male who purported to be running for a seat in the Nevada State Legislature from a small district in the southern part of the state. Groups listened to a prearranged interview designed to portray the confederate as a mild-mannered, middle-of-the-road political candidate. However, for one question in the interview, which dealt with R.O.T.C. at the University of Nevada, the candidate responded vehemently. Three groups who received the favorable outcome treatment heard the candidate deplore compulsory R.O.T.C., vigorously attack voluntary R.O.T.C., and threaten to abolish the training program if elected. To the three remaining groups, Mr. Iverson offered a stout defense of R.O.T.C. and urged that it be extended to upper division and graduate students.

At the conclusion of the interview the candidate was asked to account for his extreme position on R.O.T.C., since his remaining attitudes were quite moderate. Two groups received an explanation in terms of high role accessibility; the candidate explained that his constituency held strong feelings about military training. Two additional groups received an explanation that invoked only the candidate's personal preferences (low role accessibility), and the two remaining groups heard the candidate explain his position as a combination of personal preferences and constituency pressures (moderate role accessibility). Ss were then administered a 250 word-trait checklist and asked to indicate the person concepts that characterized the candidate.

After collection of the checklists, the purpose of the experiment was revealed to each group. Comments and suggestions for improving the study were solicited, and the ethics of utilizing deception studies were also discussed. Since all groups were run during one day, Ss were sworn to secrecy and asked not to discuss the experiment with others until the evening.

C. RESULTS AND DISCUSSION

Table 1 shows the mean number of person concepts attributed to the candidate by each group. The data were analyzed with a 2×3 analysis of

TABLE 1
MEAN NUMBER OF ATTRIBUTED PERSON CONCEPTS BY ROLE ACCESSIBILITY
AND FAVORABILITY OF OUTCOME

Outcome	Role accessibility		
	High	Moderate	Low
Favorable	15.2	20.0	22.0
Unfavorable	18.6	33.5	43.0

variance and the results are consistent with attribution theory. Fewer traits were attributed to the candidate who invoked his constituency rather than his personal preferences ($F = 12.23$, $p < .001$). The expected main effect for favorability was also significant ($F = 23.48$, $p < .001$), suggesting that Ss attributed unfavorable outcomes to dispositions and favorable outcomes to roles. This trend is particularly evident when the two lower levels of role accessibility were combined with the unfavorable outcome, yielding a significant interaction ($F = 3.80$, $p < .05$).

The acts-to-dispositions model appeared to function optimally when role discrepant behaviors were not subsumed into other roles, and when such behaviors portended unfavorable outcomes for observers. When favorable outcomes were anticipated, Ss needed only to explain and account for their good fortune. When unfavorable outcomes were anticipated, however, Ss should have been particularly alert to account for them in terms that permit manipulation, as well as explanation. According to this interpretation, person concepts rather than role concepts offered the more effective opportunity to manipulate the candidate's behavior. If so, the candidate's claim to engage in role prescribed behaviors would not be honored.

Many types of interaction, however, may fall beyond the limits of this interpretation. Among groups where the orientation to individual achievements and universalistic values are less salient, traits and person concepts may not be viewed as explanations which account for departures from prescribed roles. Although all known cultures appear to use concepts that entail personal

and situational causes of behavior, it is not evident the acts-to-dispositions model will generalize much beyond the present sample. Even among American college students, a second limitation may also be noted. Formalized transactions, which are contained in terms of well defined social roles, represent situations that may lead Ss to seek manipulations in role structures rather than person concepts. In these cases, Ss could role-take and role-play in order to influence outcomes that are comparatively resistant to personal appeal. In the present study Ss had access to roles that might be attributed to the candidate, but few roles to ascribe to themselves. Thus, the decision to ascribe role or person concepts may depend on the interaction framework, as well as outcomes, and is itself subject to interpersonal negotiation.

D. SUMMARY

Attribution theory predicts that fewer person concepts will be attributed to others when discrepant behaviors are ascribed to role performances. Ss with access to roles ascribed fewer trait words to a political candidate than Ss with limited access to role concepts. In addition, unfavorable outcomes were more likely to be attributed to dispositions than favorable outcomes when roles are equally accessible. The interaction between role accessibility and favorability of outcome suggests that trait and role ascriptions may provide negotiated frameworks for the understanding of interpersonal transactions.

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Department of Psychology
The University of Tulsa
600 South College
Tulsa, Oklahoma 74104

THE EFFECTS OF DIFFERENTIAL RANK ON MAINTAINING STABILITY IN THE DYAD*¹

School of Business and Public Administration, University of Missouri-Columbia

EARL F. LUNDGREN

A. INTRODUCTION

The study reported here is concerned only with phenomena occurring within a particular type of dyadic group—Air Force missile teams composed of a commander and a deputy. Findings from other studies on the impact of group size have a bearing, however, and will be introduced as appropriate.

The dyad appears to generate high tension because each member recognizes the need to avoid conflict and antagonism (11, pp. 1-46; 12). At the same time, it may be possible that a dyad is more satisfying to the members than a larger group would be (6, 9, 12, 13) and that leader-centered direction is minimized (7). As Zimet and Schneider (14) indicate, the dyad is a very special case.

The study by Zimet and Schneider measured, among other things, the amount and intensity of interaction among members of groups ranging in size from two to five. The content scales used in the interaction measurement were aggression, support, and dependency. It was found that as group size decreased, the amount of interaction increased. They found behavior in the dyad to be uniquely different from behavior in larger groups. There was less aggression than support in the dyad, though every other size of group showed significantly more aggression than support.

The intent of this study was to measure these same content scales—aggression, support, and dependency—with respect to the relative amounts manifested by each member of a task dyad in communicating with the other member. Subject dyad members were Air Force missile officers who work in isolation, except for radio and telephone contact, during two 12-hour duty tours in a 36-hour period. These periods occur about six times per month, so

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¹ Permission for this study was granted by the Department of the Air Force. The sample used was not random, and therefore results are not necessarily typical of the crew force from which the sample was drawn nor are the results necessarily representative of the missile program throughout the Air Force.

each dyad or crew spends about 144 hours together during a month. In addition, a measure of the Ascendancy of each member was obtained to be used in conjunction with the content scales. Each crew has a commander and deputy, so it also was possible to see if differences in rank had any effect on the other variables.

In casual conversations with crew members, both commanders and deputies downplayed the importance of any differences in rank; that is, between commander and deputy. Of course, it was acknowledged that the commander carried the major responsibility, and in an emergency, he would be expected to exercise his command. In some cases, they were of the same commissioned rank—both captains, for example—but there was always a commander and deputy; and this is the rank differential of concern in this study.

In light of the findings of other studies and of some familiarity with the situation under study, the following hypotheses were formulated:

1. The most ascendant commanders and deputies would tend to be frustrated in the dyad and would manifest relatively high aggression and low support and dependency.
2. Commanders would be higher than deputies in aggression and lower in support and dependency.
3. For both commanders and deputies, support would be higher than aggression.
4. Crews that have been together the longest would display the greatest amounts of support, dependency, and aggression.

B. METHOD

1. *Subjects*

The subjects were 32 pairs of commanders and deputies on active missile duty with the U.S. Air Force. The length of time a crew had been together varied from two months to two and one-half years. All of them volunteered for the study; hence, the sample used was not randomly selected.

2. *Procedure*

Each of the 64 participants completed the Gordon Personal Profile (5) for a measure of Ascendancy, and a questionnaire for measures of aggression, support, and dependency within the dyad. Questions were asked about the communications between the commander and the deputy, and answers were obtained on Likert-type scales in order to generate the quantitative measures.

For example, the measure of support was based on the reported extent of

agreement on various topics and the degree of identification of the deputy for the commander and *vice versa*; the dependency measure on the frequency of asking for advice and guidance, of seeking an opinion, and of requesting information on various topics; and the aggression measure on the extent of disagreement on various topics and the frequency of giving suggestions. This approach bears similarity to those used in previous studies (1, 12, 14).

The questionnaire, of course, pertained only to communications during the duty tours of the commanders and deputies. The questionnaire was used because of the impossibility of observing at first-hand the crews while on duty. While not the most desirable method, the questionnaire yields ordinal scales which may be tested by nonparametric procedures.

C. RESULTS

The hypotheses were tested with the Kendall rank correlation coefficient, τ , and the Mann-Whitney U test for two independent samples. The Kendall coefficient is equally powerful with the Spearman rank correlation coefficient and when used on data to which the Pearson r is properly applicable, both the Pearson and the Kendall coefficients have an efficiency of 91 percent (10). The Mann-Whitney test is an excellent alternative to the t test for nonparametric data (10).

Significant correlations at the five percent level were found between Ascendancy and dependency for deputies and between Ascendancy and aggression for commanders. There was a tendency for support and Ascendancy to be associated for deputies, while Ascendancy and dependency for commanders showed a slight negative direction. The first hypothesis was sustained in part for the commanders but rejected for the deputies.

With the Mann-Whitney test, a significant difference was found between the amounts of commander dependency and deputy dependency—with deputies showing the greater amount. There were tendencies for deputies to demonstrate greater support and for commanders to exhibit a larger amount of aggression. Hence the second hypothesis was supported only in the instance of commanders being lower in dependency than deputies.

Confirming the third hypothesis, as well as a previous finding of Zimet and Schneider (14), both commanders and deputies were significantly higher in support than aggression. Finally, there was significant positive correlation between crew tenure and aggression for deputies. Very slight tendencies were observed for deputy support and dependency to decrease with long tenure. Commander support and dependency increased and aggression decreased.

Only eight out of the 64 Ss reported feeling any tension during their duty

tours. Reasons for feeling tension included fatigue, that little things begin to irritate over time, and being extremely busy. Reasons for not feeling tension included having mutual trust and respect, being compatible, keeping busy, using humor, talking, reading, and minding one's own business. The level of expressed tension was very low.

D. DISCUSSION

This study made no attempt to measure the actual amount or intensity of interaction or the actual amounts of aggression, support, and dependency in the dyad. Rather the intent was to measure the relative amounts of these factors as manifested in the content of communications between the commander and his deputy and then to compare the factors among themselves and also with crew tenure and Ascendancy.

The Ss reported a very low level of tension while in the dyadic situation, yet other studies indicate tension to be high. There is, however, a normative commitment to the dyad for missile alert duty. For quite valid reasons of security and reliability, having at least two persons in a control capsule is mandatory. Because crew commanders and deputies share this commitment, their overt "no tension" comments could have been a defensive reaction; for the system does work, they make it work, and they take justifiable pride in these facts. On the other hand, it may be that interpersonal tension truly was at a very low level in the capsule crews.

The study results suggest that deputies provided more of the support than did commanders, while commanders appeared to be more aggressive in the relationship. Although the questionnaire was designed to avoid bringing in those communications that related to command situations, it is still possible, of course, that the results may be confounded by this factor.

The most ascendant commanders were also the most aggressive, while the most ascendant deputies were also the most dependent and tended to be the most supportive. The author feels that these particular results are a function of the personality trait of Ascendancy and of the difference in rank between commander and deputy. However, it is unclear why the ascendant deputy tended to be more supportive as well. Perhaps asking more tends also to bring about more instances of agreement.

The longer a crew was together, the more free the deputy felt to disagree and make suggestions. He also had a tendency to be somewhat less supportive. The commanders tended to be less aggressive and a trifle more supportive as crew tenure lengthened. This finding could mean either increasing maturity

and equality developed in the relationship or that those crews broke up early where interactions were unrewarding.

It would appear that commanders, at least in the earlier stages of the dyadic relationship, perhaps were not sufficiently supportive by way of encouraging open communication and a supportive climate—even though commanders, as well as deputies, displayed significantly more support than aggression. A more supportive relationship from the beginning might have resulted in greater satisfaction and motivation on the part of the deputy and greater cooperation and goodwill within the dyad (3, 4, 8).

Becker and Useem (2) suggested that a previous dyadic role might be important in modifying behavior in subsequent dyads. This effect could be operative in this study. Most of the commanders previously served as deputies. Their reaction to the supportive and dependent role of the deputy could have been a compensatory one, especially upon assuming their first command position. They could have reacted by behaving aggressively and offering lower support until the novelty and insecurity of command wore off and/or the dyadic relationship matured through greater familiarity and mutual knowledge and the possible development of close friendship.

E. SUMMARY

The climate of the dyad has been characterized as tense, with each member seeking to avoid disagreements and antagonism and with tactful, relatively passive behavior common. Thus the dyad may be regarded as tenuous, needing the supportive contributions of both members to maintain stability. The study investigated maintenance of stability in a dyadic situation characterized by differential rank. The sample was composed of 32 pairs of Air Force missile officers, who typically spent about 144 hours per month working together in an isolated situation. Each pair had a commander and deputy.

The study concentrated on the dimensions of aggression, support, and dependency as revealed in the content of communications and reported on a questionnaire. The trait of Ascendancy was also determined for each member via the Gordon Personal Profile. The study found that commanders who were high on Ascendancy were also high on the scale of aggression, while deputies who were ascendant were also high on dependency. Deputies generally manifested greater support and dependency than commanders, while the latter were more aggressive than deputies.

Crews that were together the longest found the deputies tending to be more aggressive while the commanders were tending to be more supportive

and less aggressive than in new crews. At least during the initial stages of crew tenure, the burden of maintaining stability appeared to fall primarily on the deputies. It was suggested that during this period, the commanders might aid in creating a healthier climate by being more supportive.

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*Department of Management
School of Business and Public Administration
University of Missouri—Columbia
Columbia, Missouri 65201*

MORAL VALUES: PERSONALITY AND DEMOGRAPHIC CORRELATES OF ATTITUDES TOWARD CRIMES WITHOUT VICTIMS*

Emory University

JOHN HOLLENDER

A. INTRODUCTION

Crimes without victims have been identified somewhat narrowly as those crimes in which there is both a lack of apparent harm to other persons and an exchange of goods or services between persons (12). Complete agreement does not exist regarding acts which might be included under this rubric; however, abortion, alcoholism, drug usage, gambling, homosexual acts, sale of pornographic materials, and prostitution are frequently included. Most of these acts also carry the label of "vice" or "vice crimes."

Uniformity of attitude toward these crimes does not exist, nor are the attitudes stable at the present time. A recent survey of 8,000 magazine subscribers indicated that only 2% of the sample viewed alcoholism as a crime while 44% viewed bookmaking as a crime (4). There was no crime listed which attained an endorsement of a majority of the respondents as criminal behavior. One crime (homosexual behavior between consenting adults) the majority of the respondents believed should be of no concern of the law. Drug addiction, alcoholism, and prostitution were seen as civil offenses rather than criminal offenses by a majority of the respondents and, as such, deserving of commitment and treatment, presumably in medical facilities, rather than imprisonment. The changes in public attitudes toward these behaviors are exemplified by the large number of states changing their laws to make abortions more widely available within the laws, by changes in laws regarding sex crimes (2), and by the flurry of court activity regarding pornography.

Attitudes towards these behaviors and the associated laws have seldom been surveyed, and legislators have been left to their own values and judgments in enacting new legislation (12). More importantly, the sources and origins of the attitudes have not been probed.

Many of the "vice" crimes are moral issues for major segments of our society. These moral issues have been codified in our laws. The attitude of an

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individual toward these "vice" behaviors may also be influenced by his political values and attitudes towards laws generally. Two general approaches to the development of attitudes toward these "vice" crimes might be pursued: one, examining antecedents of moral development; and two, examining antecedents of political development.

Moral development is assumed by some to be a unique aspect of personality development and identification, requiring a special tie of love and dependency between parent and child (8). Others argue that it is little different from other aspects of personality development in which parental controls and positive affectional relationships between parent and child facilitate role taking and identification with parental standards of morality (1, 6).

Regardless of the theoretical position taken, there is evidence that students with more mature moral judgments (judgments more characteristic of older children) have greater intelligence, higher socioeconomic standing, and more extensive participation in social activities than other students of the same age (8). Antecedents of political development are not as frequently investigated as antecedents of moral judgment. Evidence for the influence of parental relationships in the transmission of political attitudes is equivocal, at best (7).

This study examines the relationship of selected personality and demographic variables to attitudes towards controversial "vice" crimes. It is hypothesized that these attitudes are part of the moral standards and value systems of the subjects. Evidence of relationships between the attitude measure and the other variables will be interpreted as favoring this hypothesis, particularly if a positive relationship to intelligence is found (8). The alternative hypothesis would seem to be that these attitudes are situational, somewhat transitory political values, subject to more frequent change, and therefore uncorrelated with more stable personality and demographic characteristics. If the attitudes toward "vice crime" are a part of the moral values of the subjects then differential correlates may exist for each sex, since the process of identification appears to be different for each sex (9).

A second question concerns the extent to which findings in a college sample can be generalized to some wider population. A partial answer to this question may be provided by comparing the attitudes of this sample to the attitudes of some larger population.

B. METHOD

1. *Sample*

The sample consisted of 40 females and 38 males enrolled in an introductory psychology course at Emory University, a private metropolitan university, in

the spring of 1969. All students were under 25 years of age; 57% were from the South; modal family income was \$15,000-\$25,000; and most were college sophomores and juniors.

2. Procedure and Measures

A slightly modified version of a questionnaire utilized by *Psychology Today* to query their readers on attitudes and experiences with the law was administered. Additional questionnaires and scales were also administered during two periods of class time. Some students completed portions of the material outside of class due to their initial absence or inability to finish in the allotted time. All questionnaires were completed prior to the November, 1969 publication of *Psychology Today* results.

Attitudes toward five crimes without victims were assessed. The five crimes are drug addiction, alcoholism, prostitution, bookmaking, and homosexual activities by consenting adults. The students indicated whether they felt the behavior involved was criminal, a civil matter (a disorder requiring commitment and treatment), or no concern of the law. These ratings were scored with the highest score given to the last rating—no concern of the law. The ratings were then summed across the five crimes for purposes of obtaining an assessment of general attitude toward "vice" crimes to be used in the correlational analysis.

Other measures used in the present study include the Marlowe-Crowne Social Desirability Scale as a measure of need for approval (3), a not-too-subtle measure of social self-esteem requiring self-ratings (11), a more subtle measure of social self-esteem requiring rankings of social roles (14), the Concept Mastery Test as an intellectual measure (13), and nine-item semantic differential ratings (10) of Self, Ideal-Self, Mother, and Father from which discrepancy scores were obtained as measures of Self-Concept, Mother Identification, and Father Identification.

Three students did not complete the attitude questionnaire, and the sample comparisons are therefore based on 75 students. There were other data missing as well, and the number of subjects was reduced in the correlational analyses in an effort to retain as many variables as possible. Correlations were computed separately for each sex, using Pearson r 's. All demographic, attitudinal, and personality variables had a potential range of at least five raw score points and a reasonably normal distribution except for number of brothers, numbers of sisters, and birth order for which the distributions were skewed.

C. RESULTS

Table 1 contains the correlations of the demographic and personality variables with the attitudes toward "vice" law offenders. Among males, the more intelligent students, those aspiring to Ph.D.s, and those who describe themselves as having higher social self-esteem, were more likely to say that "vice"

TABLE 1
CORRELATIONS OF DEMOGRAPHIC VARIABLES, POLITICAL ATTITUDES AND VALUES, AND
PERSONALITY VARIABLES WITH ATTITUDES TOWARD VICE LAW OFFENDERS

Variables	Correlations ^a	
	Male	Female
1. Favors limiting certain individual freedoms	-.10	-.04
2. Opposes death penalty	-.26	.36
3. Opposes information gathering on citizens	.04	.20
4. Population of home-town community	.14	.18
5. Family income	-.01	-.32
6. Conservative political values	-.01	-.51**
7. Number of brothers	.09	.06
8. Number of sisters	-.15	.43*
9. Birth order	-.20	.55**
10. Father's education (years)	.24	-.32
11. Mother's education (years)	.15	-.40*
12. Educational aspiration (years)	-.06	.40*
13. Educational aspiration (degree)	.50**	.40*
14. Marlowe-Crowne Social Desirability Scale	-.02	.08
15. Social self-esteem (verbal self-description)	.42*	.25
16. Social self-esteem (ranking of social roles)	-.15	.33
17. Concept Mastery Test	.37*	.10
18. Mother-father similarity (semantic differential)	.19 ^b	.25
19. Mother identification (semantic differential)	.00	.14
20. Self-concept (semantic differential)	.04	.49**
21. Father identification (semantic differential)	-.03	.50**

^a For males, $n = 29$; for females, $n = 28$.

^b Correlations for semantic differential measures have been reversed in sign to make them directly interpretable.

* $p < .05$.

** $p < .01$.

crimes should be no concern of the law and least likely to argue that offenders should be treated as criminals.

The correlates for females are both more numerous and of a somewhat different nature. Those girls who said that "vice" crimes should be no concern of the law were likely to label themselves as liberals and also tended to oppose the death penalty ($p < .06$). These values also correlated with family structure variables such as greater numbers of sisters and later birth order position. Demographic variables were also implicated. The more years of education mother had, the more likely the daughter saw "vice" law offenders as criminals. This tended to be true for father's education also ($p < .10$).

There was also a tendency for girls from families of greater wealth to see vice law offenders as criminals ($p < .10$). Those girls who were identified with their father were more likely to argue that these behaviors should be no concern of the law. Girls with a more favorable self-concept also took this position, and there was a tendency for girls who ranked themselves in a favorable position relative to other social roles to favor the same position—no concern of the law ($p < .10$). Finally, the relationship with educational aspirations found in males was repeated in females. Girls who intended to enter graduate school or professional school favored the position that these behaviors should be no concern of the law.

To examine the question of generalization from this sample, comparisons were made with the *Psychology Today* subscriber population for each of the five attitude questions. Only in attitudes toward bookmaking did significant differences exist, 38% of the subscribers thought this should be no concern of the law, whereas only 4% of the college sample felt this way ($\chi^2 = 42.23$, $p < .001$). The student and subscriber samples were also compared on a self-categorized continuum of liberal-conservative political views and beliefs, and there was no significant difference ($\chi^2 = 1.45$, $p < .90$). The subscriber sample is best described as predominately above 25 in age, white, from the northeast, earning less than \$15,000 per year, and having a postgraduate education. Considering the age, income, and geographic differences between this student sample and the subscriber population, the author finds a remarkable similarity of self-categorization on a liberal-conservative dimension. The majority of both students (59%) and subscribers (55%) described themselves as liberal or very liberal.

For purposes of generalizing to other college samples, a comparison with a national sample of college students (5) on a left-right continuum of political values was also made. No statistical comparisons were made, since the connotations of left and liberal, or right and conservative are not exactly the same. Emory students did appear to be somewhat more liberal than the national sample of college students with 59% categorizing themselves as liberal or very liberal, compared with 37% of the national sample who categorize themselves as left or far left. Some of the differences may be due to the underrepresentation of freshmen in this college sample, since freshmen were less likely to categorize themselves as left or far left in the national sample (5).

The possibility of distortion of attitudes in an attempt to please the "liberal" instructor needs to be considered. There is no evidence that this occurred. On the contrary, the Marlowe-Crowne Social Desirability Scale, an index of

conformity, showed a correlation ($r = .42, p < .05$) with conservative political values in males and no relationship either way for females. Thus it seems reasonably safe to conclude that the correlational findings of the present sample may generalize to other "liberal" samples.

D. DISCUSSION

The number of relationships existing, the sex differences, and the nature of the relationships all suggest that attitudes toward "vice" crimes are part of the moral value system of the subjects rather than transitory, easily changed, positions. For males particularly the positive correlation between the attitude scale and intelligence and self-esteem confirms the hypothesis. For females the situation is less clear, since the correlation with political values might be interpreted as favoring the view that these attitudes are less stable, while the correlation with father identification and self-concept seems to favor the interpretation that the attitudes are stable moral values.

The sample similarities between the college sample and the magazine population suggests that the directions indicated by the personality correlates and demographic antecedents found in this sample should be pursued in larger, more representative adult samples. This study also indicates that sex differences must be examined, because they tend to obscure relationships when sexes are combined, but also because they merit investigation in their own right.

Whenever these moral issues also become practical political issues, the resulting furor, rigidity of positions, and difficulty in engaging in rational resolutions of the problems involved may be understood to be a result of the basis of the attitude in moral value systems. The basic moral values are probably acquired in a relationship with parents, which is not always understood or rationally examined when moral judgments are required. While these values do change, the changes seem likely to be at best, slow, and at worst, painful and strongly resisted.

E. SUMMARY

A variety of personality and demographic correlates of attitudes toward "vice crimes" was investigated in a college sample. It was hypothesized that correlates would exist, demonstrating that these attitudes are part of a system of moral values, rather than more transitory social-political attitudes. The hypothesis was judged to be supported, in particular, by correlations with intellectual ability and self-esteem in males and by correlations with self-concept and father identification in females. Additional significant correla-

tions also existed including a correlation with self-ratings of political values for females, which may raise some question about the stability of the attitudes toward "vice crimes" for females. Similarity of attitudes existed between this college sample and the subscriber population of a national magazine suggesting that these results may generalize to other "liberal" populations.

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Department of Psychology

Emory University

Atlanta, Georgia 30322



CONFORMITY IN PETITION-SIGNING AS A FUNCTION OF ISSUE AMBIGUITY*

Bemidji State College

JOHN M. PHILLIPS

A. INTRODUCTION

The petition has been widely recognized as an effective instrument for applying pressure for social change. Blake, Mouton, and Hain (1), however, have cast some doubt on the unequivocal acceptance of the petition as a valid indicator of general social opinion. They demonstrated that rate of signing, at least in certain cases, is more dependent on situational factors than on the potential signer's inner convictions regarding the issue under consideration. Specifically, they found that rate of signing was significantly influenced both by strength of request for endorsement and by knowledge of the reaction of others to the petition. They concluded that only when situational conditions are properly standardized can an endorsement be considered to represent a personal conviction in support of the proposal.

In an extension of the above study, Helson, Blake, and Mouton (3) found that the prospective signer's knowledge of the reaction of another to a petition was influential in determining whether or not he would sign, irrespective of whether the issue proposed was popular (originally eliciting 96 percent endorsements) or unpopular (originally eliciting only 15 percent endorsements). The authors did concede that a negative background seemed to be more effective in reducing rate of petition-signing for a popular issue than a positive background in increasing the endorsement rate for an unpopular issue. They concluded, however, that, in general, "frequency of signing is a function of strength of conforming tendency in the individual, as well as inner conviction regarding the proposal" (3, p. 9).

Two of the three petitions used in the above studies involved the proposed beautification of campus structures. Such issues, it is contended, would arouse little sentiment either pro or con within the student population employed and thus would create an ambiguous task for the subject, since cues as to the appropriate response, agreeing or refusing to sign, would not be apparent from the petition issue itself. The third petition proposed the removal of soft

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drink dispensers from the student union. Such an issue might well arouse negative sentiment in the students solicited. That is, the third issue provided subjects with an unambiguous task, since for most subjects cues as to the appropriate response—namely, to decline endorsement—were apparent from the petition issue itself.

A number of studies (2, 4, 5) have demonstrated that persons are more prone to social conformity in ambiguous situations than in unambiguous ones. In further support of this finding, it is noted that of the three above-mentioned petition situations, the one yielding the least amount of conformity might also be regarded as the least ambiguous. *Post hoc* interpretations are never a substitute for intentional research, of course. The present study was therefore conceived and conducted to provide empirical confirmation of the above interpretation.

In accordance with previous research, it was proposed that, in a petition-signing situation, amount of social conformity is directly related to task ambiguity. More particularly, if task ambiguity may be assumed to be negatively related to importance of the petition issue and, in turn, the salience of appropriate response cues, then it is hypothesized that the situational factor of knowledge of the reaction of another to a petition is a more powerful determinant of rate of endorsement when the subject is confronted with a proposal to which he is indifferent (ambiguous issue) than when he is confronted with a relatively important one (unambiguous issue).

B. METHOD

1. Subjects

Subjects for the study were 128 students sitting alone in the library at Bemidji State College, a northern Minnesota coeducational institution with an enrollment of approximately 5000.

2. Petitions

The ambiguous issue proposal read as follows: "We, the undersigned, feel the color of the school seal should be changed from hunter green to forest green." It was assumed that such a petition would generally be met with great indifference by the students solicited and would evoke no pre-existing or ready reply. The unambiguous issue proposal stated: "We, the undersigned, support the proposed establishment of an Air Force ROTC program on the Bemidji State College campus." The issue of the establishment of such a program had been the focus of controversy on the campus during the preceding

six months and appeared to be one on which student opinion was divided. Numerous speeches and articles in the student newspaper, as well as a number of student activities, had been addressed to the issue. It was therefore assumed that the proposal was one to which most students had pre-existing sentiments and ready responses, either pro or con.

Each proposal was printed at the top of an 8½ inch by 11 inch sheet of paper. A separate copy of the petition was used for each subject, so that no previous signatures appeared on the petition, except in those instances in which the subject had just witnessed another (the confederate) agree to sign.

3. Procedure

Three female students, acting as solicitors (*Sos*), and six male students, acting as confederates (*Cs*), were employed in the study. In each case *C* first unobtrusively seated himself within sight and easy hearing range of a target subject sitting alone in the college library and busied himself with a book or magazine. A few minutes later *So* entered, approached *C*, and asked, "Would you read and sign this petition?" proffering a pencil and a copy of one of the petitions. After *C* had read the petition he stated, in a voice loud enough for the subject to overhear, either "Yeah, I'll sign it," or "No, I'd rather not." *So* then solicited the subject in the same manner. For each subject the response of signing or not signing was recorded.

A 2×2 factorial design was employed with 32 subjects in each condition. The variables manipulated were petition issue ambiguity and *C* response, and subjects were asked to sign either an ambiguous or an unambiguous issue petition after witnessing *C* agree or refuse to sign it. The order of presentation of petitions, as well as the order of *C*'s reactions, was predetermined on a random basis. In addition, each *So* and each *C* ran an approximately equal number of trials under each condition. On each trial *C* decided exclusively who the target subject was to be. However, in each instance *C* did not have prior knowledge as to which petition would be employed on that trial nor as to what his response should be; he was signalled to sign or refuse to sign on the basis of the presence or absence of a small, inconspicuous mark on the petition. The chances of experimenter bias were thereby attenuated.

C. RESULTS

While roughly half the subjects solicited signed the ambiguous issue petition, rate of endorsement was largely dependent on situational manipulation. When *C* agreed to sign, 29 of 32 subjects subsequently signed; whereas only

7 of 32 subjects signed following *C*'s refusal. Overall, 84 percent of the subjects solicited to sign the ambiguous issue petition conformed to the example of *C* (50 percent could be expected by chance). A χ^2 test for the relationship between *C*'s response and subsequent subject behavior proved significant beyond the .001 level ($\chi^2 = 30.81$, $df = 1$), indicating a strong tendency toward conformity for the ambiguous issue.¹

The Air Force ROTC petition proved somewhat unpopular; fewer than one-third of the subjects solicited signed it. Following *C*'s agreement to sign, 13 of 32 subjects endorsed the petition, whereas only 7 of 32 subjects signed after witnessing *C* refuse. A trend toward conformity is apparent (59 percent of the subjects followed *C*'s example), but it is not a significant one ($\chi^2 = 1.82$, $df = 1$, $p > .10$). The results do demonstrate that knowledge of the reaction of the *C* had greater influence on rate of endorsement in the case of the ambiguous issue petition than in the case of the unambiguous one, thus confirming the hypothesis.

D. DISCUSSION

The above results lend further support to the previous finding that knowledge of the reaction of another to a petition significantly influences rate of endorsement. But such was true only for the ambiguous issue petition. Response to the ROTC proposal was more resistant to pressures toward conformity than was response to the proposal regarding the color of the school seal.

Deutsch and Gerard's (2) distinction between two major reasons for conformity behavior may be of particular value here. Normative social influence is said to occur when an individual conforms because he simply aspires to be in agreement with others. On the other hand, informational social influence occurs when an individual conforms because there are few cues in the situation other than the responses of others that may serve to guide his behavior. In the case of the ambiguous issue petition, the subject had few prior sentiments regarding the issue and had to rely primarily on situational cues—namely the behavior of *C*—to determine his response. In the case of the unambiguous issue petition, on the other hand, most subjects could rely on personal conviction and had no need to consult the behavior of others before responding.

Thus the petition may best serve as a tool for measuring conformity when the issue involved is ambiguous or weak. In such instances conformity would

¹ Yate's correction was used for both χ^2 calculations. Both tests were two-tailed.

appear to be a function more of informational than of normative social influence. Conformity is not so likely if the petition issue is unambiguous or strong, since informational social influence is not then operative. It might also be concluded that the doubts of Blake *et al.* (1) regarding the validity of the petition as an indicator of popular social opinion are, in part at least, unjustified if the issue involved is relevant or strong and if the influence of other situational factors on endorsement rate are accorded proper consideration.

E. SUMMARY

In a 2×2 factorial design, each of 128 students was solicited to sign either a petition regarding the changing of the color of the school seal or one concerning the establishment on campus of an ROTC program, and after witnessing a confederate either agree or refuse to sign the petition. Results showed that, in accordance with the hypothesis, endorsement rates for the school seal petition were primarily governed by a tendency of subjects to conform to the example of the witnessed other. Endorsement rates for the ROTC petition were not significantly influenced by background factors. It was therefore concluded that the petition may be regarded as a legitimate tool for measuring conformity, but primarily when the issue involved is weak or ambiguous, and should best be considered a legitimate indicator of opinion when the issue concerned is a prominent or important one.

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901 Ninth Avenue South
South St. Paul, Minnesota 55075

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ESTEEM AND THE EFFECTIVENESS OF A VERBAL REINFORCER* ^{1, 2}

State University of New York at Albany

BOB HELM, ROBERT C. BROWN, JR., AND JAMES T. TEDESCHI

A. INTRODUCTION

Tedeschi, Bonoma, and Schlenker (13) have proposed a general theory of social influence within dyads which interprets four basic types of influence communications in terms of decision theory. These message types include threats, promises, warnings, and mendations. Each message type has an associated probability and value. For example, a threat specifies a source demand and indicates the source's intention to punish the target for noncompliance. Similarly, a promise presents a source's request and offers a reward for compliance. The proportion of times the source has actually punished noncompliance to his threats or has rewarded compliance to his promises in previous interactions with the target defines the probability component of current threats or promises or the objective source credibility. The actual magnitude of punishment or reward stipulated in the current message defines the value associated with the influence attempt. The relationship between these two components is assumed to be multiplicative, yielding the expected value (EV) of a threat or a promise. All else equal, target compliance to promises is assumed to be a direct function of expected value, whereas compliance to threats is directly mediated by the expected costs of noncompliance.

The communications used to transmit the influence attempt may be either tacit or explicit. That is, if the contingencies surrounding target's behavior are specified by the source of the influence attempt then the attempt may be said to be explicit. Contrariwise, if the target must attempt to discover the nature of the contingency connecting his own behaviors to the reinforcements administered by the source, the influence message may be described as a tacit communication.

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2. Procedures

In the preinformation condition of the experiment, a male *C*, posing as another *S*, entered the waiting room after the *S* arrived, picked up a book and a coat from a chair and, turning to the waiting *S*, said:

I know what they wanted in that experiment. They have you make up a bunch of sentences, and every time you use "I" or "we" in a sentence the experimenter says "good." I guess they're trying to get you to use the pronouns "I" or "we" more often.

The *C* then left the room immediately. In the no preinformation condition, the *C* entered the waiting room, picked up a book and a coat, and left, saying nothing.

The *E* entered the room and said, "Hi. We'll be working together for the next half-hour or so in a verbal facilitation experiment." In the high-expertise condition he was dressed in jacket and tie, and said, "I'm a Ph.D. candidate and I'm doing this study as part of my doctoral dissertation." In the low-expertise condition, the *E* was dressed casually in jeans and sport shirt, and said, "I'm a student in the experimental psychology course and I have to do this experiment for a semester project." *Ss* were then asked to accompany the *E* to another room.

The remainder of the experiment was identical in procedure for all *Ss*. *E* and *S* were separated by a low, wooden partition; a microphone was at the *S*'s end of a small table, while at the *E*'s end of the table were stimulus cards, recording sheets, and a tape recorder. Six pronouns (YOU, THEY, I, WE, HE, SHE) were typed below a past-tense verb which was different on each of the 40 3" × 5" stimulus cards. The *Ss* were instructed to respond to the presentation of each stimulus card by verbalizing a sentence using the presented verb and any one of the six pronouns. In addition to tape-recording the session (for heightened verisimilitude only; tapes were not preserved), *E* maintained a written record of the *S*'s pronoun selection for each of the 40 trials. Each time the *S* constructed a sentence with the personal pronouns *I* or *we* in conjunction with the stimulus verb, the *E* said "good." Neither *E*'s voice inflection nor intertrial intervals were controlled; each *S* was allowed to construct sentences at his own pace.

Following the 40 trials, *Ss* were thanked for their cooperation and were asked not to discuss the experiment with their classmates. They were then instructed to report immediately to a Departmental secretary in another part of the Social Science Building in order to receive credit for participation. There, on the pretext of providing information to the Psychology Department

concerning student reactions to the requirement concerning participation in experiments, a secretary asked them to complete Byrne's (2) Interpersonal Judgment Scale (IJS), which asked for Ss' evaluations of the *E* and from which scores were obtained concerning interpersonal attraction and esteem.⁸ The secretary then debriefed and dismissed the Ss.

C. RESULTS

1. Response Level

A 2×2 analysis of variance showed that neither esteem nor preinformation variables produced a main effect on the frequency of critical responses. However, Hypothesis 1 was confirmed by an interaction ($F = 4.32$, $df = 1/36$, $p < .05$). Under the traditional social reinforcement procedure (i.e., tacit promise), Ss emitted more critical responses for the more expert ($\bar{X} = 21.7$) than for the less expert ($\bar{X} = 18.2$). Other comparisons in the interaction disconfirmed Hypothesis 2; Ss preinformed about the contingency relating their responses to *E*'s social reinforcements emitted fewer critical responses for the more expert ($\bar{X} = 17.3$) than for the less expert ($\bar{X} = 23.1$) *E*.

2. Learning Rate

A $4 \times 2 \times 2$ repeated measures analysis of variance showed a linear increase ($F = 5.44$, $df = 1/18$, $p < .03$) in critical response frequency over four blocks of 10 trials each. However, the greatest increase occurred during the second block of trials, at which time asymptotic performance was achieved, resulting in a significant quadratic three-way interaction ($F = 7.60$, $df = 1/18$, $p < .01$). Comparisons of the interaction components revealed that blocks \times preinformation \times high esteem *versus* blocks \times preinformation \times low esteem yielded a significant effect ($F = 5.03$, $df = 1/18$, $p < .04$) and the comparison of blocks \times high esteem \times preinformed *versus* blocks \times high esteem \times nonpreinformed was also significant ($F = 8.34$, $df = 1/18$, $p < .01$). Thus, when the *E* was highly esteemed and the Ss were preinformed, fewer reinforced responses were emitted over trials than when the esteem of *E* was low and Ss were preinformed. On the other hand, if the Ss were not preinformed about the reinforcement contingency, they emitted more reinforced responses over trials in the presence of the highly esteemed *E* than in interaction with an *E* of low esteem.

⁸ Items from the IJS concerning personal feelings for and willingness to work with the rated person were added together to obtain a score for attraction (2). Items concerning intelligence and respect were added together to obtain a score for esteem.

3. *Postinteraction Impressions*

Analyses of the attraction and esteem scores on the posttest impressions of the *E* indicated a main effect of preinformation on interpersonal attraction ($F = 3.78$, $df = 1/33$, $p < .06$) and a main effect of expertise on esteem ($F = 4.04$, $df = 1/33$, $p < .05$). Uninformed *Ss* ($\bar{X} = 11.78$) liked the *E* more than did the preinformed *Ss* ($\bar{X} = 10.56$). The *Ss* rated the more expert *E* ($\bar{X} = 11.67$) as more respected and intelligent (i.e., esteemed) than did *Ss* who rated the less expert *E* ($\bar{X} = 10.44$), thereby supporting the effectiveness of the esteem manipulation.

D. DISCUSSION

The confirmation of the expertise operationalization and the increased critical response frequency in the traditional verbal conditioning situation supports the SEV interpretation of *E*'s social reinforcement as a tacitly promised reward. The *E* always maintained 100% promise credibility; thus, the objective probability could not be overestimated by *Ss* in the high esteem condition. The inexpertise of a low esteem source could, however, cause target *Ss* to underestimate the objective probability of a promise. Such an interpretation adequately accounts for the observed effects of tacit influence.

The results for the preinformed *Ss* are perplexing—they verify Bandura's (1) prediction only when the *E* is of low esteem. The Levy (5) and Page (8) studies can be shown to be consistent with the present findings. Levy's experimenter was a stunning female. Although she was a graduate student, cultural stereotypes indicate that "looks" and "brains" do not go together and that young and physically attractive adult females do not concern themselves excessively with intellectual pursuits. The point is that it would not be unreasonable to assume that *Ss* perceived the *E* as attractive but not expert. Thus, *Ss* in the preinformed condition emitted more compliant responses than did *Ss* in the nonpreinformed condition. Page used "sophisticated" personality and social psychology students in one group and naive sophomore introductory psychology students in another. If it can be assumed that most advanced psychology students know what a verbal reinforcement paradigm is, then in a very real sense they could be said to be preinformed about the *E*'s requests. The *Es* were two female undergraduate students, who, it may be assumed, were regarded as low in expertise. As might be expected, given the above pattern of results, *Ss* in the "preinformed" condition emitted more reinforced responses than *Ss* in the "nonpreinformed" condition.

The question of interest is why expertise and presence or absence of preinformation interact as they apparently do in social reinforcement studies.

Response suppression may have occurred in the high esteem condition because the preinformed *S* attempted to play the role of a "good" subject. Rosenberg (11, p. 29) has suggested that *Ss* have an "anxiety-toned concern that they win positive evaluation from the *E*." Riecken (10) postulated that *Ss* actively engage in determining the intent of the *E* in order to increase the probability of receiving rewards and positive evaluation (and avoiding negative evaluation) from the *E*. Minor (7) found that *Ss* who were not concerned with evaluation did not avail themselves of such cues. Page (9) found that *Ss* for whom evaluation apprehension was aroused produced a low rate of reinforced responses in a verbal conditioning study. Presumably, then, the more evaluation apprehension aroused (depending upon the characteristics of the *E*), the more salient norms regarding cheating would be to the *S*, and the more concerned he would be that he behave just like any other "normal" *S*. If the source has high status, possesses expertise, or has high prestige, it might be expected that compliance to the tacit influence attempts of the source will be dampened by prior information possessed by the target about what the source wants. The reactance displayed was specific to the situation and the characteristics of the source involved. This *post-hoc* interpretation is weakly supported by the fact that preinformed *Ss* liked the *E* less than did *Ss* who were not provided with illegitimate information.

E. SUMMARY

Ss preinformed or not preinformed of reinforcement contingencies interacted with high- or low-esteemed experimenters in a standard verbal conditioning situation. A subjective expected value theory of social influence correctly predicted that nonpreinformed *Ss* should emit more critical responses to the more esteemed than to the less esteemed *E*, but a prediction based on previous research that preinformation should linearly heighten the effects of *E*'s esteem was not supported; preinformation reversed the effects of esteem variables. These unexpected results are discussed in terms of role-taking and evaluation apprehension hypotheses.

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Department of Psychology
State University of New York at Albany
1400 Washington Avenue
Albany, New York 12203

EFFECTS OF INVOLVEMENT, COMPETENCE, AND DISCREPANCY ON OPINION CHANGE*¹

University of Maryland

VALERIAN J. DERLEGA

A. INTRODUCTION

Festinger's (4) theory of cognitive dissonance has generated research in a number of areas. One implication of the theory has to do with the relationship between opinion change and importance of (or involvement in) an issue. The existence of mutually incompatible cognitions (such as exposure to a discrepant communication) is supposed to arouse a state of dissonance which is psychologically uncomfortable. Behavior is then directed toward the elimination of this aversive experience. The degree of involvement in the cognitive elements is one of the variables which affects the overall magnitude of dissonance. Although the exact meaning of involvement is not clear (*cf.* 7, p. 194), Zimbardo (14) has related it to the consequences associated with upholding a certain opinion on an issue.

High involvement, it has been assumed (6, 8, 11, 14), increases susceptibility to social influence and produces accelerated opinion change at higher levels of communication discrepancy. Two studies of American subjects, conducted by Freedman (5) and Zimbardo (14), seem to provide support for these predictions, in that each found a positive relationship between opinion change and discrepancy when there was high involvement in one's opinion. The studies, however, employed a distinctive technique to manipulate the variable of involvement, which suggests an alternative explanation of their results in terms of Rosenberg's (10) notion of evaluation apprehension.² According to Rosenberg, subjects (*Ss*) may feel that their mental competence and personality characteristics are being measured in a psychological experiment. If these fears are confirmed, *Ss* will try to present a favorable impression

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² Kiesler, Collins, and Miller (7) mentioned a possible relationship between involvement and evaluation apprehension in a description of Zimbardo's (14) results. The present theorizing is a development of their suggestion.

of themselves to the experimenter (*E*). In prior inductions of high involvement, opinion responses were supposed to reveal important personality characteristics, including "intelligence and perceptiveness," and "perceptual and judgmental ability." In the study by Zimbardo, *Ss* believed that they had done poorly on a related personality test. Thus, *Ss* may have been concerned about the proper way to respond on the opinion measure. Aware of some personal shortcoming (low competence), one may become susceptible to a communication from a credible source which could guarantee a favorable impression.

However, if one already possessed the favorable traits that were being tapped on the opinion measure, he should rely on his own judgment in responding. High competence *Ss* therefore should be less influenced than low competence *Ss* when their personality characteristics are apparently being measured in an opinion change study. Thus, *Ss*' perceptions of competence to express an opinion may have been confounded with the effects of involvement.

The present study used a $2 \times 2 \times 3$ factorial design with opinion change as the dependent measure. The independent variables were involvement, competence, and discrepancy. Involvement (high and low) was varied by manipulating perceptions of the extent to which an opinion questionnaire measured important personality characteristics. To vary feelings of competence to express an appropriate opinion on the questionnaire, performances on personality tests were supposed to indicate either good psychological adjustment (high competence) or poor psychological adjustment (low competence). Also, the *S* received a discrepant communication (low, medium, or high discrepancy) about the average opinion of reliable sources on a crucial item.

Differential predictions were made about the effects of these variables on opinion change. Cognitive dissonance theory should predict an Involvement main effect and an Involvement by Discrepancy interaction. That is, high involvement should produce more opinion change than low involvement, and particularly so at higher levels of discrepancy. On the other hand, considerations of evaluation apprehension suggest that opinion change depends on one's perceptions of competence to express an opinion. Therefore, a Competence main effect and a Competence by Discrepancy interaction are predicted from this point of view. Low competence *Ss* (that is, those with an unfavorable self-image) should display more opinion change than high competence *Ss*, and particularly so at higher levels of discrepancy.

More complicated predictions are also possible from the evaluation apprehension notion. For instance, low competence *Ss* may be more influenced when their fears of evaluation are supported. Thus, an Involvement by Competence

interaction is predicted in which the differences in opinion change between low and high competence Ss should be greater under high involvement than under low involvement.

B. METHOD

1. Subjects

Ss were 120 female students in introductory psychology at the University of Maryland. The experiment was presented as a survey of the relationship between women's personality characteristics and their views about the effects of children's television watching.

Twenty-three psychology graduate students, serving as assistants, were trained to conduct the experiment. Assistants were responsible for both giving instructions and administering paper-and-pencil tests to the Ss.

2. Procedure

The entire experiment was conducted in 10 sessions with 12 Ss being run at a single time. At the beginning of a session *E* gave an overview of the "survey" to the assembled group of Ss. *E* also explained that Ss might be interested in the results of their responses to various personality tests and opinion questionnaires. Thus, the assistants would take time to score personality tests, as well as to interpret their meaning to the Ss. This explanation was necessary in order to make subsequent experimental inductions seem plausible. After the introductions were completed, Ss were led to individual cubicles.

The first task for Ss was to complete two forms which purportedly measured various personality characteristics, including one's sensitivity for coping with child-rearing problems. Next, Ss answered questions on an opinion questionnaire. The involvement manipulation, which is described in the next section, appeared at this point. The questionnaire included a number of items about the control and effects of television watching on children. The pretest opinion measure was included as one of the items. It was, "How many hours a week should the typical child be permitted to watch television?"

When the opinion questionnaire was finished, Ss worked on demographic inventory to divert their attention. At some point in this phase, the assistant would interrupt to explain the S's results on the personality tests and the opinion questionnaire. Actually these private comments were intended to manipulate the competence and discrepancy variables.

A ruse was necessary to obtain the posttest opinion measure in the next phase. Ss were told that they had filled out an inappropriate form of the opin-

ion questionnaire. The assistant explained, in an apologizing manner, that the previously completed form had actually been intended for use in another study. Therefore, it would be necessary for *Ss* to complete another version of the opinion questionnaire which was intended for use in the present study. The assistant also said that some overlap existed among the items on the two forms of the questionnaire, but he would still like for *S* to complete it anyway. This "alternate" also contained the critical item about hours of television watching.

The last assigned task was to evaluate the usefulness of the survey. Items were embedded in this final form to measure the effectiveness of the experimental manipulations. *Ss* were then debriefed. The invalid personality interpretations were exposed.

3. *Involvement*

During the first administration of the opinion questionnaire, different information was given about the extent to which this form revealed important personality characteristics. In the high involvement condition, the assistant said that a strong relationship existed between level of personality adjustment and answers to the questionnaire's items. In the low involvement condition, the assistant tried to discredit the usefulness of the questionnaire as a predictor of personality characteristics. He said that no relationship had been found in prior studies between answers to the questionnaire and personality characteristics.

4. *Competence*

While the *S* had been working on the original form of the opinion questionnaire, the assistant had apparently taken time to score her results on the personality tests. Later, the assistant reported to the *S* that her test results indicated either adequate (high competence) or inadequate (low competence) personality adjustment.

In the high competence condition, *S* was told that she did very well on the personality tests. The results supposedly showed "remarkably good evidence of psychological adjustment" and "real sensitivity" in dealing with human relations problems. In the low competence condition, *S* was told that she did poorly on the personality tests. The results had indicated "poor personality adjustment and an inability to cope with problems."

5. *Discrepancy*

S was told that she scored differently from other, well-adjusted girls on the opinion questionnaire. The majority opinion was presented as highly

reliable in order to minimize a channel of dissonance reduction, derogation of the source (1). The assistant pointed to one item in the opinion questionnaire completed by the *S*. It showed the *S*'s answer to the item about hours of television watching circled in red. Alongside it was the average opinion presumably expressed by other girls. The divergent opinion was written in red for added emphasis.

The discrepant number was either 8, 16, or 23 hours from the *S*'s originally expressed opinion, depending on whether she had been assigned to the low, medium, or high discrepancy conditions, respectively. In a preliminary study, 154 females in the introductory psychology course had been asked to give their opinion for the item. The mean was 15 hours and the *SD* was 7.76. Therefore, discrepancy levels were either one, two, or three standard deviation units from the average opinion expressed by the pilot group.

The dependent variable was based on the difference score between the pre- and posttest opinion measures.

C. RESULTS

In postexperimental interviews about 15 percent of the *Ss* expressed some suspicions about the actual purpose of the study. All the *Ss*, however, were included in the final data analysis.

1. *Check on the Manipulations*

High involvement *Ss* perceived a somewhat closer relationship between personality characteristics and opinion responses than did the low involvement *Ss* ($t = 1.77$, $df = 118$, $p < .10$).³ High competence *Ss* rated themselves as scoring better on the personality tests than did the low competence *Ss* ($t = 20.96$, $df = 118$, $p < .001$). Finally, *Ss* were asked to recall the discrepancy between their original opinions on the critical item and the position attributed to the discrepant source. Reported discrepancies closely approximated the actual discrepancy levels that were used ($F = 149.73$, $df = 2/96$, $p < .001$). The manipulations therefore appeared to have been generally successful.

2. *Test of the Hypotheses*

A $2 \times 2 \times 3$ analysis of variance was carried out on the opinion-change measure. Contrary to evaluation apprehension considerations, competence did not appear in any significant effect. However, a significant Involvement by Discrepancy interaction occurred ($F = 4.16$, $df = 2/108$, $p < .05$). The means which are associated with this interaction are presented in Table 1. *Post*

³ Two-tailed tests of significance were used for all analyses.

TABLE 1
MEAN OPINION CHANGE SCORES ASSOCIATED WITH THE INVOLVEMENT
BY DISCREPANCY INTERACTION

Discrepancy	Low	Medium	High
Low involvement	1.00 ^a	2.65	4.98 ^{ab}
High involvement	3.05	2.30	1.30 ^b

Note: The greater the mean change score, the greater the change in opinion toward the advocated position. Opinion scores with the same alphabetical letter are significantly different from one another ($p < .01$).

hoc tests based on the Newman-Keuls technique were carried out on the interaction effect.

The results showed that opinion change increased between the low and high discrepancy conditions under low involvement ($p < .01$). There also was a trend, although nonsignificant, for opinion change to decrease between the low and high discrepancy conditions under high involvement. Finally, in the high discrepancy condition, opinion change was greater under low involvement than under high involvement ($p < .01$).

D. DISCUSSION

The results of the analysis of variance did not support the predictions generated from the notion of evaluation apprehension. Although the manipulation check for competence was highly significant, competence did not appear in any significant effect. Therefore, it was not possible to explain the results of earlier studies of involvement in terms of evaluation apprehension. The results also did not support the predictions generated from cognitive dissonance theory about the effects of involvement. Indeed, the results of the significant two-way interaction were contrary to prediction. It had been assumed that high involvement would accelerate opinion change at higher levels of discrepancy.

Zimbardo (14) suggested that high involvement increases dissonance and hence susceptibility to opinion change if alternative channels of dissonance reduction have been eliminated. This prediction implies a problem-solving function for involvement where one is concerned about "the instrumental relationship of a given opinion or response to the achievement of a desired goal" (14, p. 92).

Dissonance is supposed to occur after a decision has been made (*cf.* 4, p. 39). Yet this feature of dissonance theory may have been overlooked in Zimbardo's treatment of involvement. In Zimbardo's (14) study, ~~Ss~~ were not involved in their original opinions. *E* had explained that the pretest measures had been

taken under hurried conditions and were probably not indicative of Ss' true opinions. Then Ss were given a second opinion measure after they were aware of the discrepant judgment. It is difficult to specify the nature of dissonance in this situation. The dissonance aroused by the discrepant judgment may have been eliminated by E's attempt to discredit the importance of the pretest responses. Ss could have reduced dissonance by derogating the usefulness of their original responses. Then the effects of involvement noted by Zimbardo may have been simply due to Ss' concern about the adequacy of their responses rather than to any attempt to reduce dissonance. A similar explanation seems to account for the results obtained by Freedman (5). Ss had been told that their first responses were not important and only their second responses would be scored. They would resist opinion change because they attached great weight to their original responses. They might lose face by yielding and admitting the inadequacy of their own judgments.

Fairly substantial evidence indicates that commitment to a position increases resistance to social influence (e.g., 3, 5, 6, 9). Also, Brehm and Cohen (2), in their revision of cognitive dissonance theory, suggested that commitment serves to minimize change of an associated cognitive element. If involvement may be interpreted as increasing commitment to an original position, it may serve to decrease opinion change. Therefore, a new interpretation of cognitive dissonance theory suggests that high involvement in one's original opinion makes yielding an unlikely technique for reducing dissonance. Instead, some alternative technique will be adopted for reducing the dissonance aroused by a discrepant judgment. The predictions derived by Zimbardo about involvement and opinion change seem relevant when a person is still undecided about his ultimate response.

A further examination of the procedure in the present study suggests that the high involvement condition enhanced Ss' commitment to their original responses. Ss could not disassociate themselves from their original opinions. The pretest measure supposedly revealed important personality characteristics in the high involvement condition, although the first opinion questionnaire was to be disregarded. The dissonance aroused by the discrepant judgment could not be reduced by devaluating the importance of the pretest measure.

Cognitive dissonance theory does not provide the only available explanation of the results. Sherif and Hovland's (12, 13) social judgment theory offers predictions about the effects of involvement. The theory represents a person's position on an issue in terms of a continuum of acceptable and unacceptable positions. It predicts that high involvement increases the range of positions which a person rejects as unacceptable. Therefore, high involvement would

produce resistance to opinion change because the discrepant opinion fell in the range of rejectable positions. If the discrepant opinion fell in the range of acceptable positions, as social judgment theory would assume for low involvement persons, opinion change would increase as a function of discrepancy. This finding occurred in the present study. Social judgment theory does not explain why opinion change did not significantly decrease as a function of increasing discrepancy under high involvement, although the relationship was in the predicted direction.

It is apparent that a great deal of work remains to study the relationship between involvement and opinion change. The present study demonstrates that the effects of involvement depend on the degree of discrepancy of the advocated position. The possible interaction of involvement with other variables, including commitment to a position, competence, communicator credibility, and discrepancy deserve more attention. Many of the results on involvement have been obtained with American Ss, especially undergraduates. Data on involvement for different age and cultural groups should be collected.

Finally, a restatement of the prediction of cognitive dissonance theory about involvement and opinion change seems necessary. Involvement in an original position on an issue may tend to produce resistance to opinion change. The person will become increasingly committed to his original opinion so that he relies on other means besides opinion change to reduce dissonance aroused by a discrepant communication.

E. SUMMARY

Predictions derived from cognitive dissonance theory and the notion of evaluation apprehension were tested in a $2 \times 2 \times 3$ design with opinion change as the dependent variable. The independent variables were involvement, competence, and discrepancy. The Ss were 120 female college students. Discrepancy and opinion change were directly related under low involvement but inversely related under high involvement. The results indicate the desirability of a possible restatement of the predictions of involvement in cognitive dissonance theory. Prior inductions of involvement may have overlooked the postdecisional character of dissonance processes. Also, social judgment theory seemed to provide an alternative interpretation of the results.

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Department of Psychology
Old Dominion University
Norfolk, Virginia 23508



CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

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ATTITUDES TOWARD THE DISABLED— A CROSS-CULTURAL STUDY*¹

West Virginia University

M. S. TSENG²

The notion that the variable, attitudes toward the disabled, is associated with attitudes toward the minority group² and with the degree of cultural modernity³ would give rise to the following questions. Would a cultural minority group show more positive attitudes toward the disabled, than would a cultural majority group, simply because the cultural minority group feels sympathetic to another minority group? Or, would the cultural minority group, because it comprises members of a traditional and less modernized culture, show more negative attitudes toward the disabled than would a cultural majority group? This study investigated attitudes toward the disabled with cultural orientation, manifest anxiety, and locus of control as independent variables. Subjects were 67 Asian students (54 male, 13 female) and 61

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³ Jordan, J. E., & Friesen, E. W. Attitudes of rehabilitation personnel toward physically disabled persons in Columbia, Peru, and the United States. *J. Soc. Psychol.*, 1968, 74, 151-161.

American students (47 male, 14 female) enrolled in West Virginia University. The instruments used were the Attitudes Toward Disabled Persons Scale Form A,⁴ the Taylor Manifest Anxiety Scale,⁵ and the Rotter I-E Scale.⁶

Manifest anxiety and length of time the Asian students stayed in the United States were found to be significant correlates of attitudes toward the disabled. The higher the subjects' anxiety level, the more negative would be their attitudes toward the disabled ($r = -.29$, $df = 126$, $p < .01$); and the longer the time the Asian students stayed in the United States, the more positive would become their attitudes toward the disabled ($r = .29$, $df = 65$, $p < .05$).

A $2 \times 2 \times 2$ factorial analysis of variance revealed two significant main effects, culture and anxiety, and one significant interaction, culture \times anxiety \times locus of control. The American students showed significantly more positive attitudes toward the disabled than did the Asian students ($F = 29.40$, $p < .001$), thus confirming the cultural modernity hypothesis. Subjects with high manifest anxiety exhibited significantly more negative attitudes toward the disabled than subjects having low manifest anxiety ($F = 4.22$, $p < .05$). Although internal-external locus of control was not a significant main effect, it interacted significantly with culture and anxiety. The Duncan's Multiple Range Test revealed, for example, that the American low anxiety-internal group showed significantly more positive attitudes toward the disabled than did the Asian high anxiety-external group ($F = 4.31$, $p < .05$).

An hypothesis that the effect of cultural adaptation of the Asian students would contribute to the shifting of their locus of control toward the internal direction was also tested. Results showed that the Asian students who had been in the United States for more than one year (mean I-E = 9.5, $SD = 4.4$) were more externally oriented than the American students (mean I-E = 9.1, $SD = 4.2$), but more internally oriented than the Asian students whose stay in the United States was one year or less (mean I-E = 11.5, $SD = 3.4$). These significant differences ($p < .05$) support the hypothesis of an E-I shift due to cultural adaptation.

*Rehabilitation Research and Training Center
West Virginia University
Morgantown, West Virginia 26506*

⁴ Yaker, H. E., Block, J. R., & Young, J. H. The Measurement of Attitudes Toward Disabled Persons. Albertson, N.Y.: Human Resources Center, 1966.

⁵ Taylor, J. A. A personality scale of manifest anxiety. *J. Abn. & Soc. Psychol.*, 1953, 48, 285-290.

⁶ Rotter, J. B. Generalized expectancies for internal *versus* external control of reinforcement. *Psychol. Monog.*, 1966, 80, No. 1 (Whole No. 609).

PREJUDICE AND PERSONALITY IN WHITE SOUTH AFRICA:
A "DIFFERENTIAL LEARNING" ALTERNATIVE TO
THE AUTHORITARIAN PERSONALITY*

University of Cape Town, South Africa

CHRISTOPHER ORPEN AND LESLEY VAN DER SCHYFF

The Authoritarian Personality theory¹ contends that certain personality needs predispose one to prejudice because of a particular congruence between personality and attitude. Many studies, even in ostensibly "authoritarian" cultural settings,² have reported highly significant correlations between measures of prejudice and the personality variable of authoritarianism, usually assessed by the F-scale. The fact that the F-scale is closely related to nonpersonality factors, such as level of education, income level, cultural background, and social sophistication,³ suggests that it may not be tapping deep-lying personality needs (repression, projection) but, like most attitude scales, is mainly an indicator of individual variations in exposure to the ideas contained in the items. Since scales of prejudice are similarly related to individual variations in exposure to the ideas contained in their items,⁴ it follows that the correlations between these two sets of individual variations (prejudice, F-scale authoritarianism) could result from their accidental concomitance in the cultural exposures of the subjects; and have little to do with the psychodynamics of the individual. If this "differential learning" hypothesis⁵ is valid, then the correlation between prejudice and F-scale authoritarianism should depend on the extent to which prejudice ideas and authoritarian ideas coexist in the same subculture. In a subculture marked by a high degree of consistency between these sets of ideas, the correlation should be high; in a subculture marked by a low degree of consistency,

* Received in the Editorial Office, Provincetown, Massachusetts, on August 23, 1971 and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1972, by The Journal Press.

¹ Adorno, T. W., Frenkel-Brunswick, E., Levinson, D. J., & Sanford, R. N. *The Authoritarian Personality*. New York: Harper, 1950.

² Orpen, C. Authoritarianism in an "authoritarian" culture: The case of Afrikaans-speaking South Africa. *J. Soc. Psychol.*, 1970, 81, 119-120.

³ Orpen, C. Authoritarianism in an "authoritarian" culture: A critical examination of the "theory" of the authoritarian personality. Unpublished Doctoral thesis, University of Cape Town, South Africa, 1970.

⁴ Orpen, C. Prejudice and adjustment to cultural norms among English-speaking South Africans. *J. of Psychol.*, 1971, 77, 217-218.

⁵ Rhyne, E. H. Racial prejudice and personality scales: An alternative approach. *Soc. Forces*, 1962, 41, 44-53.

tency, the correlation should be low. To test this prediction, a 24-item balanced form of the F-scale and a short anti-African prejudice scale,⁶ developed from actual statements made by white South Africans in informal discussion groups, were given to 58 lower-class white South African apprentices (average age 17.0) and the results compared to those of a sample⁷ of 98 upper-class white South African university students (average age 17.9). Both groups are highly exposed to the prejudiced ideas current in white South Africa,⁸ with the majority of members in both groups supporting political parties that endorse a white supremacy ideology. However, the apprentice group are more heavily exposed to the "authoritarian" norms emanating from the ruling Afrikaans elite than the student group, who attend the multiracial University of Cape Town with its relatively "equalitarian" norms.⁹ Hence the consistency between prejudice and authoritarian ideas is greater in the apprentice sample than in the student sample.

The correlation between prejudice, as assessed by the anti-African scale, and the F-scale measure of authoritarianism in the apprentice sample ($r = .33$, $p < .02$) was higher than that in the student sample ($r = .20$, $p > .05$). Also, the mean item score of the apprentice sample on the F-scale (4.03) was significantly higher ($p < .01$) than that of the student sample (3.31). Both results confirm predictions from the "differential learning" hypothesis.

Department of Psychology

University of Cape Town

Rondebosch, Cape Town, South Africa

⁶ Colman, A. M., & Lambley, P. Authoritarianism and racial attitudes in South Africa. *J. Soc. Psychol.*, 1970, **82**, 161-164.

⁷ Orpen, C. Authoritarianism and racial attitudes among English-speaking South Africans. *J. Soc. Psychol.*, 1971, **84**, 301-302.

⁸ Marquard, L. *Peoples and Policies of South Africa*. London, England: Oxford Univ. Press, 1962.

⁹ Thompson, L. M. *Politics in the Republic of South Africa*. Boston, Mass.: Little, Brown, 1966.

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 87, 315-316.

REINFORCEMENT AND ATTITUDE CHANGE: RESULTS SUGGESTING THE IMPORTANCE OF DEMAND CHARACTERISTICS*

Brigham Young University

GARY G. TAYLOR AND JON I. YOUNG

Greenbaum¹ found no main effect due to reinforcement on attitude change even though he presents evidence that his manipulation was effective. He postulates that subjects may have been responding to "situational demands" in those studies finding reinforcement effects. His argument is that subjects may have responded on the postsession questionnaire in a manner allowing them to appear consistent with their attitudinal stand during the study.

The present experiment was intended to investigate the effects of reinforcement and need for social approval in attitude change in the situation in which the postsession questionnaire is apparently not related to the experiment. Thirty-two undergraduates, selected from introductory psychology classes on the basis of pretest attitude scores, created and delivered persuasive messages consonant with their pre-existing opinions. Subjects were led to believe they were receiving feedback from "partners" concerning the effect of their speech. This feedback was delivered mechanically in the form of ratings made at 30-second intervals. Subjects were divided in terms of high and low need for social approval and they experienced either positive or negative reinforcement. The postexperimental measure was of considerable concern in light of Greenbaum's findings and care was taken to dissociate the measure from the experi-

* Received in the Editorial Office, Provincetown, Massachusetts, on August 6, 1971. Copyright, 1972, by The Journal Press.

¹ C. W. Greenbaum, Effect of situational and personality variables on improvisation and attitude change. *J. Personal. & Soc. Psychol.*, 1966, 4, 260-269.

ment proper. Subjects completed the postsession questionnaire as part of a survey that subjects were led to believe was not connected with the present experimenter or experiment. Should subjects have become aware of the experimental intent, it was felt that the awareness would not bias responding due to the careful "divorcing" procedure. Reinforcement has the potential of providing cues regarding the experimental purpose, and need for approval has been related to compliance with situational demand characteristics.²

Self-evaluations of the speeches were significantly different for positive and negative reinforcement groups, suggesting that the reinforcement manipulation was effective. Attitude change in the direction of their argument occurred for all subjects when compared to a control group not receiving the experimental manipulation. However, an analysis of covariance revealed no difference in attitude change in either the reinforcement or social approval conditions. These results agree with Greenbaum's and suggest the possibility that reinforcement effects in attitude change may be artifactual. They suggest further than dissociating the postsession measure may control against undue influence of demand characteristics in attitude change experimentation. The results raise several important questions for which answers are not currently available.

(a) Do demand characteristics have their main effect as the measure of the dependent variable is taken, or do they become an integral part of the experimental effect inducing "real" change prior to the dependent variable measure?

b) Are some measures more resistant to the effects of demand characteristics than others? Research related to these questions is in progress.

Department of Psychology
Brigham Young University
Provo, Utah 84601

² S. R. Sherman, Demand characteristics in an experiment on attitude change. *Sociometry*, 1967, 30, 246-261.

LEADERSHIP SELECTION AND GROUP PERFORMANCE: AN EXPANDED REPLICATION*

U. S. Army, 249th General Hospital, Japan

LOUIS A. FRAAS

This study attempts to reevaluate the effectiveness of group performance as related to type of incentive (reward *vs.* punishment) and formation of the group itself (leaderless *vs.* leader selected groups).

Goldman and Fraas¹ studied the effects of leadership selection on group performance. Their results, using a time measure of performance on a version of the game "Twenty Questions," suggest that leader selected groups performed more efficiently than leaderless groups. Earlier, however, in a somewhat similar study, Goldman, Bolen, and Martin² found that superior group performance was obtained by leaderless groups. In both these studies attempts were made to keep group task, member motivation and leader motivation (positive only) constant. In the present study, member and leader motivation become variables.

Eighty-six *Ss* between the ages of 18 and 21 years were selected from the medical wards at The U.S. Army's 249th General Hospital, Japan. All *Ss* were enlisted personnel on their first tour of duty, ambulatory, and without debilitating physical or mental illness.

Three types of groups were used, each group consisting of three to four *Ss*. Leaderless groups (NL) functioned without a designated leader. In leader selected groups (LS), the leader was appointed by announcing that he would hold a leadership position because of his demonstrated ability to perform more effectively on the preinstruction tasks. These leaders were also given extra rewards and punishments because of their position as leader. The last grouping (NLS) was similar to the LS except for the fact the leaders received no extra reward or punishment.

Rewards and punishments were the promise of reward or the threat of punishment regarding an entry into the individual's Army personnel file stating his (relative) effective or ineffective performance in the group.

* Received in the Editorial Office, Provincetown, Massachusetts, on August 9, 1971. Copyright, 1972, by The Journal Press.

¹ Goldman, M., & Fraas, L. The effects of leader selection on group performance. *Sociometry*, 1965, 28, 82-88.

² Goldman, M., Bolen, M., & Martin, R. Some conditions under which groups operate and how this affects their performance. *J. Soc. Psychol.* 1961, 54, 47-56.

The "word puzzle" task was a version of the game "20 Questions." Time and trial measures were used in evaluating performance.³

In all, four reward and four punishment groups were conducted in each NL, LS, and NLS condition.

A 2 (reward *vs.* punishment) by 3 (NL *vs.* LS *vs.* NLS) analysis of variance was used to test for differences between time and trial score means and interactions. Main treatments and interactions proved to be nonsignificant.

Results suggest that replication of the earlier studies using different tasks, subject types, and motivational variables may be necessary (*cf.* Hollander and Julian)⁴ before generalizations beyond the "college sophomore" can be made regarding the adequacy of leader selection procedures on group productivity.

Research & Evaluation Division
U. S. Army Correction Training Facility
Fort Riley, Kansas 66442

³ See footnote 2.

⁴ Hollander, E., & Julian J. Contemporary trends in the analysis of leadership processes. *Psychol. Bull.*, 1969, **71**, 387-397.

SIGNATURE SIZE AND STATUS*

Brigham Young University

BLAIR R. SWANSON AND RAYMOND L. PRICE

Recently Zweigenhaft¹ published an article in this journal relating signature size to status awareness. The author's hypothesis was that as social status increases so does signature size. Three studies were used to support this hypothesis. However, only the first study matched groups according to the number of letters in a signature. It is reasonable to assume that this factor, the number of letters in a name, influences the space taken and size of a signature.

In an attempt to replicate Zweigenhaft's findings, three groups were compared. To improve the experimental design, these groups were matched according to the standard space allowed for a signature, 1.6 centimeters, $\pm .2$ centimeters. Also, groups were statistically matched for the size and the number of letters in a signature by using the analysis of covariance technique. From the results as reported by Zweigenhaft, it is hypothesized that signature size would increase with increasing social status.

Subjects were drawn from a reply to a job application from school districts in Utah and California. In all, 15 superintendents, 21 pupil personnel directors, and 13 secretaries responded with their personal signatures. The letters were counted and the signature size measured according to the procedures of Zweigenhaft, pp. 49-50.

A one-way analysis of covariance using a square root transformation was performed on the three groups. Significant differences were noted between groups ($F = 3.35$, $df = 2/45$, $p < .05$, one-tailed test). Means and SD s follow. For signature size, in cm^2 : superintendents, $\bar{X} = 12.20$, $SD = 8.5$; pupil personnel directors, $\bar{X} = 8.39$, $SD = 2.9$; and secretaries, $\bar{X} = 7.13$, $SD = 3.9$. As noted, the hypothesis of Zweigenhaft was upheld.

8101 Dunbarton Avenue
Los Angeles, California 90045

* Received in the Editorial Office, Provincetown, Massachusetts, on August 10, 1971. Copyright, 1972, by The Journal Press.

¹ Zweigenhaft, R. L. Signature size: A key to status awareness. *J. Soc. Psychol.*, 1970, 81, 49-54.

1. 1. 1.
2. 2. 2.
3. 3. 3.
4. 4. 4.

1. 1. 1.
2. 2. 2.

1. 1. 1.

CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin in the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 87, 321-322.

EXAMINERS' RACE AND SUBJECTS' RESPONSES TO AN ATTITUDE SCALE*

San Diego State College and Miami University

JEROME M. SATTLER, DANIEL SKENDERIAN, AND ANDREW J. PASSEN

Does the examiners' race, S's anonymity, or S's need-for-approval affect the responses given by white Ss to a paper-and-pencil measure of attitudes toward blacks? The hypothesis was that the most favorable responses occur with a black examiner, under nonanonymity, and among high need-for-approval Ss.

The Ss were 436 white male and female students at Miami University of Ohio. The examiner-confederates (*Es*) were 10 white and 10 black college students. *Es*' racial membership was clearly evident. The physiques of the two *E* groups were generally similar. *Es* were trained to follow standard procedures, wore ties and suit jackets, were not informed of the hypothesis, and served in both an anonymous and nonanonymous condition. All *Es* were male.

All Ss completed four forms in the same order: Attitude Scale,¹ Marlowe-Crowne Social Desirability Scale, Personal Data Sheet, and Post-Experimental Questionnaire. The experimental design was a $6 \times 2 \times 2 \times 2$ factorial ANOVA (unweighted means analysis): (*a*) *Es*' race (single white *E* and single black *E*, and four combinations of black and white *E* teams), (*b*) anonymity (placing or not placing name on forms), (*c*) need-for-approval, and (*d*) replications (the survey was repeated with a different group of *Es* and Ss). The Attitude Scale score was the dependent measure. The survey was

* Received in the Editorial Office, Provincetown, Massachusetts, on September 27, 1971. Copyright, 1972, by The Journal Press.

¹ Fendrich, J. M. A study of the association among verbal attitudes, commitment and overt behavior in different experimental situations. *Soc. Forces*, 1967, 45, 347-355.

conducted in 24 sections of freshman English. *Es* were usually randomly assigned to sections.

All ANOVA results were not significant. Therefore, the hypothesis was rejected. The mean score of 60.35 represents a mean scale position of 1.89 which is on the low prejudice end of the five-point scale. Less than 5% of the *Ss* stated that the *Es*' race affected their replies.

An intercorrelation matrix revealed the following significant correlations: (a) prejudice with sex² ($-.21$)³ and with church attendance ($.14$)³; (b) need-for-approval with church attendance ($.10$)⁴ and with father's education ($-.10$)⁴; (c) sex with church attendance ($.18$)³ and with father's income ($-.12$)³; (d) church attendance with father's education ($-.13$)³; (e) father's income with father's education ($.42$)³.

It is concluded that Midwestern white college students, who express their attitudes toward blacks on college campuses via a group-administered questionnaire administered by minimally trained student *Es*, are not affected by the *Es*' race, by the racial composition of the *E* team, by the condition of anonymity, or by their degree of need-for-approval. Discrepancies between the present findings and those of Summers and Hammond⁵ could be due to differences in *S* populations and procedures, and differential sensitivity of the measuring instrument used. The low scores of the *Ss* probably account for the lack of significant findings and also argue against the generalizability of the results to more prejudiced groups.

Department of Psychology
San Diego State College
San Diego, California 92115

² males = 1, females = 2.

³ $p < .01$.

⁴ $p < .05$.

⁵ Summers, G. F., & Hammond, A. D. Effect of racial characteristics of investigator on self-enumerated responses to a Negro prejudice scale. *Soc. Forces*, 1966, 44, 515-518.

ENVIRONMENTAL ATTITUDES AND ACTIONS*¹

Department of Psychology, Smith College

LEONARD BICKMAN

Despite concern expressed over environmental problems, this subject has been largely neglected in the current psychological literature.² However, most environmental problems can probably be traced to man's behavior. One problem linked directly to human behavior is littering. Although the mass media have attempted to deal with the litter problem, there have not been many systematic attempts to investigate the behavioral and attitudinal aspects of littering. The present study examines factors that affected Ss picking up "planted" litter.

In the first experiment two empty soda cans were placed in front of the college library, near a trash can. Passing pedestrians, in one condition, saw a model (another college student) kick one of the cans "unintentionally" and walk on. In a second condition the model picked up the can and placed it in the trash can. Meanwhile, the S passed the other soda can. It was expected that the S would conform to the model's behavior. After about two hours the experiment was abandoned. None of the 20 Ss tested picked up the can. At this point there was concern over two factors. First, were Smith students concerned about environmental problems, especially litter? Second, was the litter noticeable enough? The second experiment investigated these two factors.

The litter in the second experiment was crumpled newspaper. In one condition the crumpled pages were coming out of a small tipped over trash can. In another condition a single crumpled page was placed several feet from the trash can. In both cases the litter was placed directly in the path so that pedestrians had to walk over or around it. The Ss were forced to be somewhat aware of the litter to avoid stepping into it. Two locations were used for the placement of the litter: one in front of the school library, the other in front of a store on a street adjacent to the college.

Every fifth person who passed the litter was stopped about 10 feet from it

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¹ This study was conducted by the author's experimental social psychology class. I wish to thank the following students who were Es in the present study: Nancy Ashton, Katrina Carye, Chris Darling, Heather Hall, Mary Heald, Mindy Leach, Margie Moffett, Jane Tonner, Laurie Weil, and Dana Zuckerman.

² A notable exception is an experiment by Burgess, R., Clark, R. & Hendee, J. An experimental analysis of anti-litter procedures. *J. Appl. Behav. Anal.*, 1971, 4, 71-75.

and interviewed by one of the *Es* who claimed she was conducting a survey for an ecology course. The interview dealt with littering and the key question asked was "should it be everyone's responsibility to pick up litter when they see it or should it be left for the people whose job it is to pick up?" Ninety-four percent of the *Ss* answered that it was everyone's responsibility. Apparently there existed a uniformly positive attitude on the part of the *Ss* concerning what one should do about litter.

The *Es* observed 409 students and 97 nonstudents who passed the litter. Of this number only eight (1.4%) picked up the litter (five students, three nonstudents). Neither location nor presence of the trash can affected the proportion of *Ss* picking up the litter. There obviously was great disparity between the attitudes these *Ss* expressed and their actual behavior. This disparity between attitudes and actions has been well documented in a number of other studies.⁸ It may be tentatively concluded that environmental problems will not be solved by simply influencing verbally expressed attitudes.

Department of Psychology

Clark Science Center

Smith College

Northampton, Massachusetts 01060

⁸ See Wicker, A. An examination of the "other variables" explanation of attitude-behavior inconsistency. *J. Personal. & Soc. Psychol.*, 1971, 19, 18-30.

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AUTHOR INDEX

Adinolfi, Allen A.	13	Lundberg, Ulf	169
Allen, B. J., Jr.	45	Lundgren, Earl F.	273
Allen, Vernon L.	29	Martens, Janet L.	157
Anwar, Mah Pervin	21	Miller, Thomas W.	153
Beshai, James A.	197	Musoke-Mutanda, Fred	141
Bickman, Leonard	323	Orpen, Christopher	313
Blanchard, Edward B.	37	Passen, Andrew J.	321
Blitz, Robert	251	Phillips, John M.	287
Bonoma, Thomas V.	89	Poole, Kenneth	51
Bratfisch, Oswald	169	Price, Katina C.	37
Bronzaft, Arline L.	155	Price, Raymond L.	319
Brown, Robert C. Jr.	293	Raymond, Beth J.	75
Child, Irvin L.	21	Rodda, William C.	157
Cole, David L.	159	Ross, Abraham S.	83
Coles, Gary J.	127	Rudin, Lawrence A.	235
Coulter, Thema T.	59	Russell, Gordon W.	219
Curto, Salvatore E.	149	Ryckman, Richard M.	157
Dansereau, Donald F.	251	Sattler, Jerome M.	321
David, Kenneth H.	243	Schneider, Gunter	145
Derlega, Valerian J.	301	Sheehan, Peter W.	179
Eckensberger, Lutz H.	145	Sherman, Martin F.	157
Eckman, Gosta	169	Sistrunk, Frank	149, 151
Epstein, Gilda F.	155	Skenderian, Daniel	321
Eswara, H. S.	139	Smith, Kay H.	205
Eysenck, H. J.	59	Smith, R. Bob, III	151
Fraas, Louis A.	317	Stewart, Shelley J.	179
Garcia, Angela B.	3	Stinson, John E.	99
Gardner, R. C.	259	Stone, LeRoy A.	127
Gorospe, F. H.	259	Swanson, Blair R.	319
Granzberg, Gary	189	Taylor, Gary G.	205, 315
Guten, Sharon	29	Tedeschi, James T.	89, 151, 293
Hardy, Robert C.	147	Touhey, John C.	213, 269
Hautaluoma, Jacob E.	143	Tseng, M. S.	311
Hellebrandt, E. T.	99	Unger, Rhoda K.	75
Helm, Bob	89, 151, 293	Van der Schyff, Lesley	313
Hollender, John	279	Vickers, Marilyn	37
Hood, William R.	235	Villamin, A. C.	259
Horowitz, Irwin A.	117	Wahba, Mahmoud A.	107
Izzett, Richard R.	229	Wilson, Pauline	83
Kirby, D. M.	259	Wober, Mallory	141
Klein, Robert E.	13	Young, Jon I.	315
Leginski, Walter	229	Zimmerman, Barry J.	3
Loomis, Ross J.	143		

TABLE OF CONTENTS

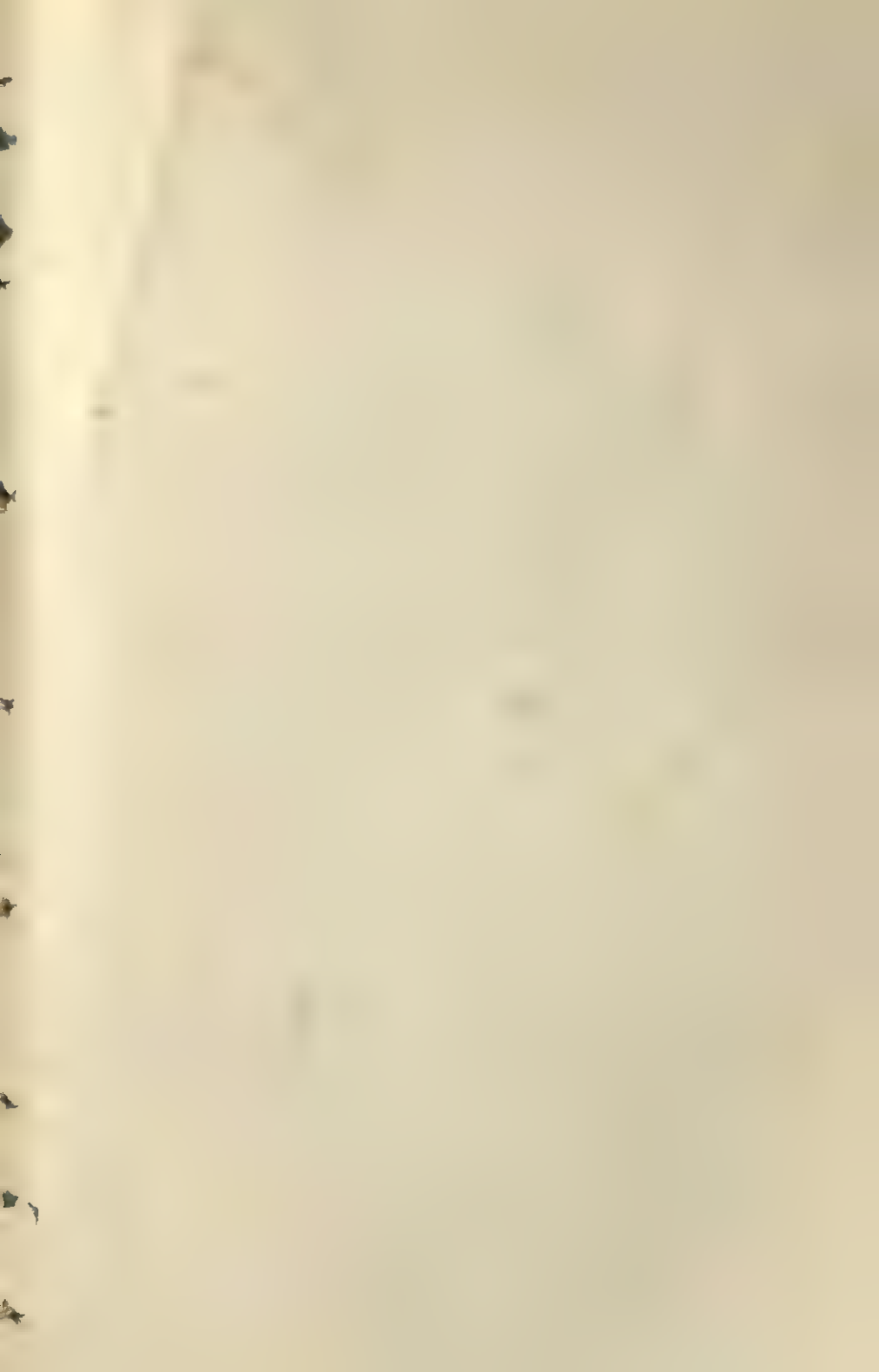
The effect of examiner ethnicity and language on the performance of bilingual Mexican-American first graders	3
BY ANGELA B. GARCIA AND BARRY J. ZIMMERMAN	
The value orientations of Guatemalan subsistence farmers: Measurement and implications	13
BY ALLEN A. ADINOLFI AND ROBERT E. KLEIN	
Personality and esthetic sensitivity in an Islamic culture	21
BY MAH PERVIN ANWAR AND IRVIN L. CHILD	
Likelihood of escape, likelihood of danger, and panic behavior	29
BY SHARON GUTEN AND VERNON L. ALLEN	
Balance effects in image formation	37
BY EDWARD B. BLANCHARD, MARILYN VICKERS, AND KATINA C. PRICE	
The construction of an instrument to measure American sociopolitical values	45
BY B. J. ALLEN, JR.	
The etiology of gender identity and the Lesbian	51
BY KENNETH POOLE	
The personality and attitudes of working-class British Communists and Fascists	59
BY H. J. EYSENCK AND THELMA T. COULTER	
"The apparel oft proclaims the man": Cooperation with deviant and conventional youths	75
BY BETH J. RAYMOND AND RHODA K. UNGER	
The effects of utility of information and intent on interpersonal esteem	83
BY ABRAHAM S. ROSS AND PAULINE WILSON	
Reciprocity for harm done	89
BY BOB HELM, THOMAS V. BONOMA, AND JAMES T. TEDESCHI	
Group cohesiveness, productivity, and strength of formal leadership	99
BY JOHN E. STINSON AND E. T. HELLEBRANDT	
Preferences among alternative forms of equity: The apportionment of coalition reward in the males and females	107
BY MAHMOUD A. WAHBA	
Attitude change as a function of perceived arousal	117
BY IRWIN A. HOROWITZ	
Multidimensional judgment scaling of well-known political figures	127
BY LEROY A. STONE AND GARY J. COLES	
CROSS-CULTURAL NOTES	
Administration of reward and punishment in relation to ability, effort, and performance	139
BY H. S. ESWARA	
Patience, and gratification preferences among Ugandan school children	141
BY MALLORY WOBBER AND FRED MUSOKE-MUTANDA	

Perception of visual illusions in a sample of Afghan boys	143
By JACOB E. HAUTALUOMA AND ROSS J. LOOMIS	
Identification processes among change agents in technical schools of Afghanistan	145
By LUTZ H. ECKENSBERGER AND GUNTER SCHNEIDER	
REPLICATIONS AND REFINEMENTS	
A developmental study of relationships between birth order and leadership style for two distinctly different American groups	147
By ROBERT C. HARDY	
Opinion change as a function of the race of the experimenter, the communication source, and the subject	149
By SALVATORE E. CURTO AND FRANK SISTRUNK	
Verbal conditioning of "aware" subjects	151
By R. BOB SMITH III, BOB HELM, AND JAMES T. TEDESCHI	
Cultural dimensions related to parental verbalization and self-concept in the child	153
By THOMAS MILLER	
Test anxiety, sex, and ordinal position	155
By ARLINE L. BRONZAFT AND GILDA F. EPSTEIN	
CURRENT PROBLEMS AND RESOLUTIONS	
Locus of control and attitudes toward women's liberation in a college population	157
By RICHARD M. RYCKMAN, JANET L. MARTENS, WILLIAM C. RODDA, AND MARTIN F. SHERMAN	
Machiavellianism and political behavior	159
By DAVID L. COLE	
Masculinity-femininity and conformity	161
By FRANK SISTRUNK	
BOOKS RECENTLY RECEIVED	
Emotional involvement and subjective distance: A summary of investigations	169
By ULF LUNDBERG, OSWALD BRATFISCH, AND GÖSTA EKMAN	
A cross-cultural study of eidetic imagery among Australian Aboriginal children	179
By PETER W. SHEEHAN AND SHELLEY J. STEWART	
Hopi initiation rites—A case study of the validity of the Freudian theory of culture	189
By GARY GRANZBERG	
Content analysis of Egyptian stories	197
By JAMES A. BESHAI	
The effect of anticipating the continuation of role playing on attitude change	205
By GARY G. TAYLOR AND KAY H. SMITH	
Role perception and the relative influence of the perceiver and the perceived	213
By JOHN C. TOUHEY	
The perception and classification of collective behavior	219
By GORDON W. RUSSELL	

Impression formation as a function of self <i>versus</i> other as source of the information	229
BY RICHARD R. IZZETT AND WALTER LEGINSKI	
The point fallacy and latitude dimensions of attitude change	235
BY LAWRENCE A. RUDIN AND WILLIAM R. HOOD	
Generalization of operant conditioning of verbal output in three-man discussion groups	243
BY KENNETH H. DAVID	
The effect of underlying situational characteristics on the risky shift phenomenon	251
BY ROBERT BLITZ AND DONALD F. DANSEREAU	
Ethnic stereotypes: An alternative assessment technique, The stereotype differential	259
BY R. C. GARDNER, D. M. KIRBY, F. H. GOROSPE, AND A. C. VILLAMIN	
Attribution of person concepts by role accessibility and interaction outcomes	269
BY JOHN C. TOUHEY	
The effects of differential rank on maintaining stability in the dyad	273
BY EARL F. LUNDGREN	
Moral values: Personality and demographic correlates of attitudes toward crimes without victims	279
BY JOHN HOLLENDER	
Conformity in petition-signing as a function of issue ambiguity	287
BY JOHN M. PHILLIPS	
Esteem and the effectiveness of a verbal reinforcer	293
BY BOB HELM, ROBERT C. BROWN, JR., AND JAMES T. TEDeschi	
Effects of involvement, competence, and discrepancy on opinion change	301
BY VALERIAN J. DERLEGA	
CROSS-CULTURAL NOTES	
Attitudes toward the disabled—A cross-cultural study	311
BY M. S. TSENG	
Prejudice and personality in white South Africa: A "differential learning" alternative to the authoritarian personality	313
BY CHRISTOPHER ORPEN AND LESLEY VAN DER SCHYFF	
REPLICATIONS AND REFINEMENTS	
Reinforcement and attitude change: Results suggesting the importance of demand characteristics	315
BY GARY G. TAYLOR AND JON I. YOUNG	
Leadership selection and group performance: An expanded replication	317
BY LOUIS A. FRAAS	
Signature size and status	319
BY BLAIR R. SWANSON AND RAYMOND L. PRICE	

CURRENT PROBLEMS AND RESOLUTIONS

Examiners' race and subjects' responses to an attitude scale	321
BY JEROME M. SATTLER, DANIEL SKENDERIAN, AND ANDREW J. PASSEN	
Environmental attitudes and actions	323
BY LEONARD BICKMAN	
BOOKS RECENTLY RECEIVED	325



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<i>American</i>	<i>Amer.</i>	Mathematical	<i>Math.</i>
<i>Anatomical</i>	<i>Anat.</i>	Measurement	<i>Meas.</i>
<i>Animal</i>	<i>Anim.</i>	Medical	<i>Med.</i>
<i>Applied</i>	<i>Appl.</i>	Mental	<i>Ment.</i>
<i>Archives</i>	<i>Arch.</i>	Monographs	<i>Monog.</i>
<i>Association</i>	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
<i>Attitude</i>	<i>Attit.</i>	Opinion	<i>Opin.</i>
<i>Austrian</i>	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
<i>Behavior</i>	<i>Behav.</i>	Personality	<i>Personal.</i>
<i>British</i>	<i>Brit.</i>	Personnel	<i>Person.</i>
<i>Bulletin</i>	<i>Bull.</i>	Philosophy	<i>Philos.</i>
<i>Bureau</i>	<i>Bur.</i>	Physics	<i>Phys.</i>
<i>Canadian</i>	<i>Can.</i>	Physiology	<i>Physiol.</i>
<i>Character</i>	<i>Charac.</i>	Proceedings	<i>Proc.</i>
<i>Child</i>	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
<i>Chinese</i>	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
<i>Clinical</i>	<i>Clin.</i>	Psychology	<i>Psychol.</i>
<i>College</i>	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
<i>Comparative</i>	<i>Comp.</i>	Quarterly	<i>Quart.</i>
<i>Consulting</i>	<i>Consult.</i>	Religious	<i>Relig.</i>
<i>Contributions</i>	<i>Contrib.</i>	Research	<i>Res.</i>
<i>Development</i>	<i>Devel.</i>	Review	<i>Rev.</i>
<i>Educational</i>	<i>Educ.</i>	School	<i>Sch.</i>
<i>Experimental</i>	<i>Exper.</i>	Science	<i>Sci.</i>
<i>General</i>	<i>Gen.</i>	Social	<i>Soc.</i>
<i>Genetic</i>	<i>Genet.</i>	Statistics	<i>Stat.</i>
<i>Indian</i>	<i>Ind.</i>	Studies	<i>Stud.</i>
<i>Industrial</i>	<i>Indus.</i>	Teacher	<i>Teach.</i>
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The listing of monographs for 1926 through 1963 will be printed in the first half of each volume of all five journals. Monographs published after 1963 will be listed in the second half of each volume.

Genetic Psychology Monographs (continued)

VOLUME 1-1926

1. Performance tests for children of pre-school age—R. STUTSMAN
2. An experimental study of the eidetic type—H. KLÜVER
- 3 & 4. A study of natio-racial mental differences—N. D. M. HINCH
5. A psychological study of juvenile delinquency by group methods—J. W. BRIDGES AND K. M. B. BRIDGES
6. The influence of puberty praecox upon mental growth—A. GSELL

VOLUME 2-1927

- 1 & 2. The mind of a gorilla—R. M. YERKES
3. The role of eye-muscles and mouth-muscles in the expression of the emotions—K. DUNLAP
4. Family similarities in mental-test abilities—R. R. WILLOUGHBY
5. Coordination in the locomotion of infants—L. H. BURNSEIDE
6. The mind of a gorilla: Part II. Mental development—R. M. YERKES

VOLUME 3-January-June, 1928

1. An experimental study of the olfactory sensitivity of the white rat—J. R. LIGGETT
2. A photographic study of eye movements in reading formulae—M. A. TINKER
3. An experimental study of the East Kentucky mountaineers—N. D. M. HINCH
4. Responses of foetal guinea pigs prematurely delivered—G. T. AVERY
5. Objective differentiation between three groups in education (teachers, research workers, and administrators)—M. B. JENSEN

6. The effect of segregation on the sex behavior of the white rat as measured by the obstruction method—M. JENSEN

VOLUME 4-July-December, 1928

1. Observation and training of fundamental habits in young children—E. A. BOTT, W. E. BLATZ, N. CHANT, AND H. BOTT
- 2 & 3. Determination of a content of the course in literature of a suitable difficulty for junior and senior high school students—M. C. BUNCH
- 4 & 5. Methods for diagnosis and treatment of cases of reading disability—M. MONROE
6. The relative effectiveness of lecture and individual reading as methods of college teaching—E. B. GREENE

VOLUME 5-January-June, 1929

1. The age factor in animal learning: I. Rats in the problem box and the maze—C. P. STONE
2. The effect of delayed incentive on the hunger drive in the white rat—E. L. HAMILTON
3. Which hand is the eye of the blind?—J. M. SMITH
4. The effect of attitude on free word association-time—A. G. EKDAHL
5. The localization of tactual space: A study of average and constant errors under different types of localization—L. E. COLE
6. The effects of gonadectomy, vasotomy, and injections of placental and orchic extracts on the sex behavior of the white rat—H. W. NISSELY

VOLUME 6-July-December, 1929

1. Learning and growth in identical infant twins: An experimental study by the method of co-twin control—A. GSELL AND H. THOMPSON
2. The age factor in animal learning: II. Rats on a multiple light discrimination box and a difficult maze—C. P. STONE
3. The acquisition and interference of motor habits in young children—E. MCGINNIS
4. A vocational and socio-educational survey of graduates and non-graduates of small high schools of New England—A. D. MUELLER

- 5 & 6. A study of the smiling and laughing of infants in the first year of life—R. W. WASHBURN

VOLUME 7-January-June, 1930

1. Tensions and emotional factors in reaction—E. DUFFY
2. Teacher influence on class achievement: A study of the relationship of estimated teaching ability to pupil achievement in reading and arithmetic—H. R. TAYLOR
- 3 & 4. A study of the effect of inverted retinal stimulation upon spatially coordinated behavior—P. H. EWENT
5. A study of the mental development of children with lesion in the central nervous system—E. E. LORD
6. An experimental study upon three hundred school children over a six-year period—N. D. M. HINCH

VOLUME 8-July-December, 1930

1. The amount and nature of activities of newborn infants under constant external stimulating conditions during the first ten days of life—O. C. LEWIN
2. Race and social differences in performance tests—S. D. PORTEUS, et al.
3. Language and growth: The relative efficacy of early and deferred vocabulary training, studied by the method of co-twin control—L. C. STRAYER
4. Eye-movements and optic nystagmus in early infancy—J. M. MCGINNIS
- 5 & 6. Reactions of kindergarten, first-, and second-grade children to constructive play materials—L. FARWELL

VOLUME 9-January-June, 1931

- 1 & 2. The status of the first-born with special reference to intelligence—H. H. HSIAO
- 3 & 4. An experimental study of bright, average, and dull children at the four-year mental level—H. P. DAVIDSON
5. An historical, critical, and experimental study of the Scashore-Kwalwasser test battery—P. R. FARNSWORTH
6. A comparison of difficulty and improvement in the learning of bright and dull children in reproducing a descriptive selection—F. T. WILSON

VOLUME 10-July-December, 1931

1. A comparative study of a group of southern white and negro infants—M. B. MCGRAW
- 2 & 3. An experimental study of prehension in infants by means of systematic cinema records—H. M. HALVERSON
4. The limits of learning ability in kittens—A. M. SHUEY
- 5 & 6. The effect of habit interference upon performance in maze learning—O. W. ALM

VOLUME 11-January-June, 1932

1. General factors in transfer of training in the white rat—T. A. JACKSON
2. The effect of color on visual apprehension and perception—M. A. TINKER
3. The reliability and validity of maze experiments with white rats—R. LEEPER
4. A critical study of two lists of best books for children—F. K. SHUTTLEWORTH
- 5 & 6. Measuring human energy cost in industry: A general guide to the literature—R. M. PAGE

VOLUME 12-July-December, 1932

1. Family resemblances in verbal and numerical abilities—H. D. CARTER
2. The development of fine prehension in infancy—B. M. CASTNER
- 3 & 4. The growth of adaptive behavior in infants: An experimental study at seven age levels—H. M. RICHARDSON
- 5 & 6. Differential reactions to taste and temperature stimuli in newborn infants—K. JENSEN

VOLUME 13-January-June, 1933

1. A critique of sublimation in males: A study of forty superior single men—W. S. TAYLOR
2. A study of the nature, measurement, and determination of hand preference—H. L. KOCH, et al.
3. The growth and decline of intelligence: A study of a homogeneous group between the ages of ten and sixty—H. E. JONES AND H. S. CONRAD
4. The relation between the complexity of the habit to be acquired and the form of the learning curve in young children—M. L. MATTHEWSON
5. Eating habits in relation to personality development of two- and three-year-old children: A study of sixty-nine children in two nursery schools—A. A. ELIOT
6. Coordinating mechanisms of the spinal cord—O. C. INGENHUTSEN

Genetic Psychology Monographs (continued)

VOLUME 14—July-December, 1933

1. Mental growth during the first three years: A developmental study of sixty-one children by repeated tests—N. BATLEY
2. A study of triplets: including theories of their possible genetic relationships—F. N. ANDERSON AND N. V. SCHEIDEMANN
3. The objective measurement of emotional reactions—H. V. CASKILL
4. Development of behavior in the fetal cat—J. D. CORONIOS
5. A study of certain language developments of children in grades four to twelve, inclusive—L. L. LABRANT
6. The effect of early and delayed practice on memory and motor performances studied by the method of co-twin control—J. R. HUGGARD

VOLUME 15—January-June, 1934

1. Studies in the psychology of tone and music—P. R. FARNSWORTH
2. Motor learning of children in equilibrium in relation to nutrition—E. L. BEERS
3. Discrimination limits of pattern and size in the goldfish *Carassius auratus*—J. B. ROWLEY
4. Limits of learning ability in the white rat and the guinea pig—B. F. RIESS
- 5 & 6. The limits of learning ability in rhesus monkeys—H. A. FJELD

VOLUME 16—July-December, 1934

1. A statistical study of ratings on the California Behavior Inventory for Nursery-School Children—H. S. CONRAD
2. An eye-movement study of objective examination questions—A. FRANDSEN
3. An experimental study of constitutional types—O. KLINGBERG, S. E. ASCH, AND H. BLOCK
4. The development of a battery of objective group tests of manual laterality, with the results of their application to 1300 children—W. N. DUNOFF
- 5 & 6. An experimental study in the prenatal guinea-pig of the origin and development of reflexes and patterns of behavior in relation to the stimulation of specific receptor areas during the period of active fetal life—L. CARMICHAEL

VOLUME 17—January-December, 1935

1. Organization of behavior in the albino rat—R. L. THORNDIKE
2. Brightness discrimination in the rhesus monkey—M. P. CRAWFORD
3. The limits of learning ability in cebus monkeys—A. M. KOCH
4. Nature-nurture and intelligence—A. M. LEAHY
5. On intelligence of epileptic children—E. B. SULLIVAN AND L. GAHAGAN
6. A study of the play of children of preschool age by an unobserved observer—D. L. COCKRELL

VOLUME 18—January-December, 1936

1. Sex differences in variational tendency—O. MCNEMAR AND L. M. TERMAN
2. The process of learning to dress among nursery-school children—C. B. KEY, M. R. WHITE, M. P. HONZIK, A. B. HEINRY, AND D. ERWIN
3. A study of the present social status of a group of adults, who, when they were in elementary schools, were classified as mentally deficient—W. R. BALLER
4. The influence of specific experience upon mental organizations—A. ANASTASI
- 5 & 6. Studies in aggressiveness—L. BENDER, S. KEISER, AND P. SCHILDER

VOLUME 19—January-December, 1937

1. Psychological bases of self-mutilation—C. DABROWSKI
2. Masculine temperament and secondary sex characteristics: A study of the relationship between psychological and physical measures of masculinity—H. GELKINSON
3. A psychological study of forty unmarried mothers—R. D. NOTTINGHAM
4. Behavior problems in the children of psychotic and criminal parents—L. BENDER
5. Domination and integration in the social behavior of young children in an experimental play situation—H. H. ANDERSON
6. The sequential patterning of prone progression in the human infant—L. B. AMES

VOLUME 20—January-December, 1938

1. The relationship between characteristics of personality and physique in adolescents—P. S. DE O. CAROT
2. Behavior problems of elementary school children: A descriptive and comparative study—I. Y. MASTEN
3. Graphic representation of a man by four-year-old children in nine prescribed drawing situations—P. F. GRIDLEY
4. Differences between two groups of adult criminals—R. S. TOLMAN
5. A comparative study by means of the Rorschach method of personality development in twenty pairs of identical twins—E. TAOUR
6. Individual differences in the facial expressive behavior of preschool children: A study by the time-sampling method—C. SWAN

VOLUME 21—January-December, 1939

1. An experimental analysis of "level of aspiration"—R. GOULD
2. Some light on the problem of bilingualism as found from a study of the progress in mastery of English among preschool children of non-American ancestry in Hawaii—M. E. SMITH
3. Domination and social integration in the behavior of kindergarten children and teachers—H. H. ANDERSON
4. The capacity of the rhesus and cebus monkey and the gibbon to acquire differential response to complex visual stimuli—W. E. GALT
5. The social-sex development of children—E. H. CAMPBELL

VOLUME 22—January-December, 1940

1. Measuring human relations: An introduction to the study of the interaction of individuals—E. D. CHAPPEL
2. Aggressive behavior in young children and children's attitudes toward aggression—M. D. FITZ
3. Student attitudes toward religion—E. NELSON
4. The prediction of the outcome on furlough of dementia praecox patients—J. S. JACOB
5. Significant characteristics of preschool children as located in the Conrad inventory—K. H. READ
6. Learning by children at noon-meal in a nursery school: Ten "good" eaters and ten "poor" eaters—J. B. MCCAY, E. B. WARING, AND P. J. KRAUSE
7. Studies in the interpretation of play: I. Clinical observation of play disruption in young children—E. H. ERIKSON

VOLUME 23—January-June, 1941

1. An analysis of certain variables in a developmental study of language—F. M. YOUNG
2. Infant development under conditions of restricted practice and of minimum social stimulation—W. DENNIS
3. An analysis of the mental factors of various age groups from nine to sixty—B. BALINSKY
4. Factors influencing performance on group and individual tests of intelligence: I. Rate of work—M. W. BENNETT
5. Individual differences in apperceptive reaction: A study of the response of preschool children to pictures—E. W. AMER

VOLUME 24—July-December, 1941

1. Twins T and C from infancy to adolescence: A biogenetic study of individual differences by the method of co-twin control—A. GESSELL AND E. THOMPSON
2. Finger nail-biting: Its incipency, incidence, and amelioration—A. L. BILLIC
3. An experimental study of the factors of maturation and practice in the behavioral development of the embryo of the frog, *Rana pipiens*—A. FROMME
4. The Fels child behavior scales—T. W. RICHARDS AND M. P. SIMONS
5. Measurement of the size of general English vocabulary through the elementary grades and high school—M. K. SMITH
6. Stereotypes in the field of musical eminence—P. R. FARNSWORTH

VOLUME 25—January-June, 1942

1. A study of factors determining family size in a selected professional group—J. C. FLANAGAN
2. A genetic study of geometrical-optical illusions—A. WALTERS
3. Interpretation of behavior-ratings in terms of favorable and unfavorable deviations: A study of scores from the Real Conrad Behavior Inventory—K. H. READ AND H. S. CONRAD
4. Are there any innate behavior tendencies?—J. B. SCHOELLAND
5. An investigation of the intelligibility of the speech of the deaf—C. V. HUDGINS AND F. C. NUMBERS

Genetic Psychology Monographs (continued)

VOLUME 26—July-December, 1942

1. The critical frequency limen for visual flicker in children between the ages of 6 and 18—V. L. MILLER
Some factors determining handedness in the white rat—K. L. WENTWORTH
2. Motivation and behavior—E. FRENKEL-BRUNSWIK

VOLUME 27—January-June, 1943

1. Comparison of children's personality traits, attitudes, and intelligence with parental occupation—N. R. MADDY
2. A comparative study of mental functioning patterns of problem and non-problem children seven, eight, and nine years of age—M. L. PIGNATELLI

VOLUME 28—July-December, 1943

1. Separation anxiety in young children: A study of hospital cases—H. EDELSTON
2. Correlates of vocational preferences—W. A. BRADLEY, JR.

VOLUME 29—January-June, 1944

1. Mental changes after bilateral prefrontal lobotomy—S. D. PORTEUS AND R. D. KEPNER
2. A twin-controlled experiment on the learning of auxiliary languages—B. PRICE, W. J. KOSTER, AND W. M. TAYLOR

VOLUME 30—July-December, 1944

1. A method of administering and evaluating the thematic appreciation test in group situations—R. M. CLARK
2. A study of anxiety reactions in young children by means of a projective technique—R. TEMPLE AND E. W. AMEN

VOLUME 31—January-June, 1945

1. The evolution of intelligent behavior in rhesus monkeys—B. WEINSTEIN
2. Perceptual behavior of brain-injured, mentally defective children: An experimental study by means of the Rorschach technique—H. WEINER

VOLUME 32—July-December, 1945

1. A clinical study of sentiments: I.—H. A. MURRAY AND C. D. MORGAN
2. A clinical study of sentiments: II.—H. A. MURRAY AND C. D. MORGAN

VOLUME 33—January-June, 1946

1. Interpretation of spontaneous drawings and paintings—T. S. WAERNER
Preferences for sex symbols and their personality correlates—K. FRANCK
2. Outstanding traits: In a selected college group, with some reference to career interests and war records—F. L. WELLS AND W. L. WOODS

VOLUME 34—July-December, 1946

1. The relation of emotional adjustment to intellectual function—J. L. DESPERT AND H. O. PIERCE
The smiling response: A contribution to the ontogenesis of social relations—R. A. SPITZ
2. Finger-painting and personality diagnosis—P. J. NAPOLI

VOLUME 35—January-June, 1947

1. The thematic apperception technique in the study of culture-personality relations—W. E. HENRY
2. A continuation study of anxiety reactions in young children by means of a projective technique—M. DONKEY AND E. W. AMEN

A study of the vocational interest trends of secondary school and college women—A. M. CAWLEY

VOLUME 36—July-December, 1947

1. Maze test validation and psychosurgery—S. D. PORTEUS AND H. N. PETERS
2. The diagnostic implications of Rorschach's test in case studies of mental defectives—I. JOLLES

VOLUME 37—January-June, 1948

1. The radio day time serial: A symbolic analysis—W. L. WARNER AND W. E. HENRY
The relation of personality characteristics and response to verbal approval in a learning task—G. L. GRACE
2. The mechanism of vision. XVIII. Effects of destroying the visual "associative areas" of the monkey—K. S. LASHLEY
A study of the relationship between handwriting and personality variables—P. CASTELNUOVA-TERESCO

VOLUME 38—July-December, 1948

1. Modern language learning: The intensive course as sponsored by the United States Army, and implications for the undergraduate course of study—M. LIND
Conflict: A study of some interactions between appetite and aversion in the white rat—M. A. TOLCOTT
2. Schizophrenia and the MAPS test: A study of certain formal psycho-social aspects of fantasy production in schizophrenia as revealed by performance on the Make a Picture Story (MAPS) Test—E. S. SHNEIDMAN
A study of the transmission of authority patterns in the family—H. L. INGERSOLL

VOLUME 39—January-June, 1949

1. A study of the psychoanalytic theory of psychosexual development—G. S. BLUM
The assessment of parental attitudes in relation to child adjustment—E. J. SHOREN, JR.
2. Qualitative differences in the vocabulary responses of normals and abnormals—H. FEIKEL
The relative effectiveness of motion and still pictures as stimuli for eliciting fantasy stories about adolescent-parent relationships—P. E. EISEMAN
The organization of hereditary maze-brightness and maze-dullness—L. V. SEARLE

VOLUME 40—July-December, 1949

1. An experimental study of what young school children expect from their teachers—B. BIERER AND C. LEWIS
A study of the relative effects of age and of test difficulty upon factor patterns—H. A. CURTIS
A projective experiment using incomplete stories with multiple choice endings—J. K. SEATON
2. Effects of sex role and social status on the early adolescent personality—E. MILNER
Social perceptions and attitudes of children—M. RADKE, H. TRACER, AND H. DAVIS

VOLUME 41—January-June, 1950

1. Some psychological and educational aspects of pediatric practice: A study of well-baby clinics—L. H. BLUM
One-trial learning in the domestic rat—B. B. HUDSON
An introduction to the principles of scientific psychoanalysis—A. ELLIS
2. Awareness of racial differences by preschool children in Hawaii—D. V. SPRINGER
Age trends in children's evaluation of teacher-approved and teacher-disapproved behavior—S. L. WITRYLO
The relationship between level of vocational aspiration and certain personal data: A study of some traits and influences bearing on the prestige level of vocational choice—J. STUBBINS

VOLUME 42—July-December, 1950

1. Personality patterns of suicidal mental hospital patients—N. L. FARBROW
Sex-role identification in young children in two diverse social groups—M. RABBAN
2. A study of the influence of the social field on individual behavior: As revealed in the expression of hostility and warmth by neurotics and paranoid schizophrenics in discussion group situations—D. SHAPIRO
An experimental study of avoidance—R. F. HOFFERLINE

VOLUME 43—January-June, 1951

1. A study of copying ability in children—E. A. TOWNSEND
Prestige motivation of gifted children—D. P. AUGUSZL
2. A psychological study of physical scientists—A. ROE

VOLUME 44—July-December, 1951

1. The organization of hostility controls in various personality structures—S. FISHER AND E. HINDS
Children and radio: A study of listeners and non-listeners to various types of radio programs in terms of selected ability, attitude, and behavior measures—E. A. RICCIUTI
2. Quantitative expression in young children—W. E. MARTIN
The use of magnetic devices in the collection and analysis of the preverbal utterances of an infant—A. W. LYNNE

VOLUME 45—January-June, 1952

1. Japanese-American personality and acculturation—W. CAUDILL
2. A statistical study of the Freudian theory of levels of psychosexual development—C. A. BARNES
Personality characteristics of selected disability groups—D. N. WIENNER

Genetic Psychology Monographs (continued)

VOLUME 46—July-December, 1952

1. The relationship of social status, intelligence, and sex of ten- and eleven-year-old children to an awareness of poverty—F. J. ESTYAN
An empirical study of the castration and Oedipus complexes—S. M. FRIEDMAN
2. The relationship between projective test scoring categories and activity preferences—M. M. SCHWARTZ
A comparison of formal and content factors in the diagnostic testing of schizophrenia—M. SHERMAN

VOLUME 47—January-June, 1953

1. Ability and accomplishment of persons earlier judged mentally deficient—D. C. CHARLES
Variations in the consistency of the behavioral meaning of personality test scores—M. KONNREICH
2. Some child-rearing antecedents of aggression and dependency in young children—R. R. SEARS, et al.
Symptom correlates for descriptive diagnosis—J. R. WITTENBORN, et al.

VOLUME 48—July-December, 1953

1. Age and mental abilities: A longitudinal study—W. A. OWENS, JR.
The development of a personality questionnaire for drinkers—P. J. HAMPTON
Personality and physical disease: A test of the Danbar hypothesis applied to diabetes mellitus and rheumatic fever—D. H. CROWELL
2. Socio-economic contrasts in children's peer culture prestige values—B. PORZ
A critical review of the stability of social acceptability scores obtained with the partial-rank-order and the paired-comparison scales—S. A. WITKOL AND G. C. THOMPSON
A study of the effects of color on Rorschach responses—G. G. BRODY

VOLUME 49—January-June, 1954

1. Factors underlying major reading disabilities at the college level—J. A. HOLMES
Parent behavior toward first and second children—J. K. LASKO
2. Social-status and intelligence: An experimental study of certain cultural determinants of measured intelligence—E. A. HAGGARD
Certain determinants and correlates of authoritarianism—S. SINGEL
Personalities in faces: I. An experiment in social perceiving—P. F. SECORD, W. F. DUKES, AND W. BRYAN

VOLUME 50—July-December, 1954

1. A study of the relationship between play patterns and anxiety in young children—E. W. AMEN AND N. RENISON
Operational exploration of the conceptual self system and of the interaction between frames of reference—M. EDLSON AND A. E. JONES
Problem solving: A statistical description of some relationships between organismic factors and selected response measures—N. A. FATTU, E. KAFOS, AND E. V. MACH
2. The relation of cortical potentials to perceptual functions—C. CHYATTE
The import for clinical psychology of the use of tests derived from theories about infantile sexuality and adult character—D. W. MILES
Measuring personality in developmental terms: The Personal Preference Scale—M. H. KROUT AND J. K. TABIN

VOLUME 51—January-June, 1955

1. Some relations between techniques of feeding and training during infancy and certain behavior in childhood—A. BERNHEIMER
The expression of personality in drawings and paintings—L. H. STEWART
2. Negative stereotypes concerning Americans among American-born children receiving various types of minority-group education—J. A. FISHMAN
The Lincoln-Oseretsky Motor Development Scale—W. SLOAN

VOLUME 52—July-December, 1955

1. Some personality correlates of sex, sibling position, and sex of sibling among five- and six-year-old children—H. L. KOCH
A quantitative Rorschach assessment of maladjustment and rigidity in acculturating Japanese Americans—C. DeVoe
Measurement of authoritarianism and its relation to teachers' classroom behavior—H. M. MCCUE
2. The formal aspects of schizophrenic verbal communication—B. MINT
A study in an aspect of concept formation, with subnormal, average, and superior adolescents—H. N. HOFFMAN
Traumatic auditory learning: Acquisition and extinction in dogs deprived of normal peripheral autonomic function—L. C. WYNN AND R. L. SOLOMON

VOLUME 53—January-June, 1956

1. As the psychiatric aide sees his work and problems—F. L. WELLS, M. GREENBLATT, AND R. W. HYDE
An investigation of avoidance, anxiety, and escape behavior in human subjects as measured by action potentials in muscle—J. D. BROTHERS
Spread of effect: A critical review—M. H. MARX
2. Stress, fantasy, and schizophrenia: A study of the adaptive processes—O. J. B. KERNER
The attitude structure of the individual: A Q-study of the educational attitudes of professors and laymen—F. N. KUEHLINGER

VOLUME 54—July-December, 1956

1. A study of personality differences between middle and lower class adolescents: The Second Test in culture-personality research—L. RAINWATER
The assessment of parental identification—S. W. GRAY AND R. KLAUS
2. The influence of social context on impulse and control tendencies in preadolescents—G. H. ZUK
Tender-mindedness versus tough-mindedness in psychology: A reexamination—H. WINTHROP
A method for the comparison of groups: A study in thematic apperception—L. C. SCHAW AND W. E. HENRY

VOLUME 55—January-June, 1957

1. Academic performance and personality adjustments of highly intelligent college students—B. M. HORWALL
The use of the Vineland Social Maturity Scale in the planning of an educational program for non-institutionalized low-grade mentally deficient children—M. G. GORTERSEN
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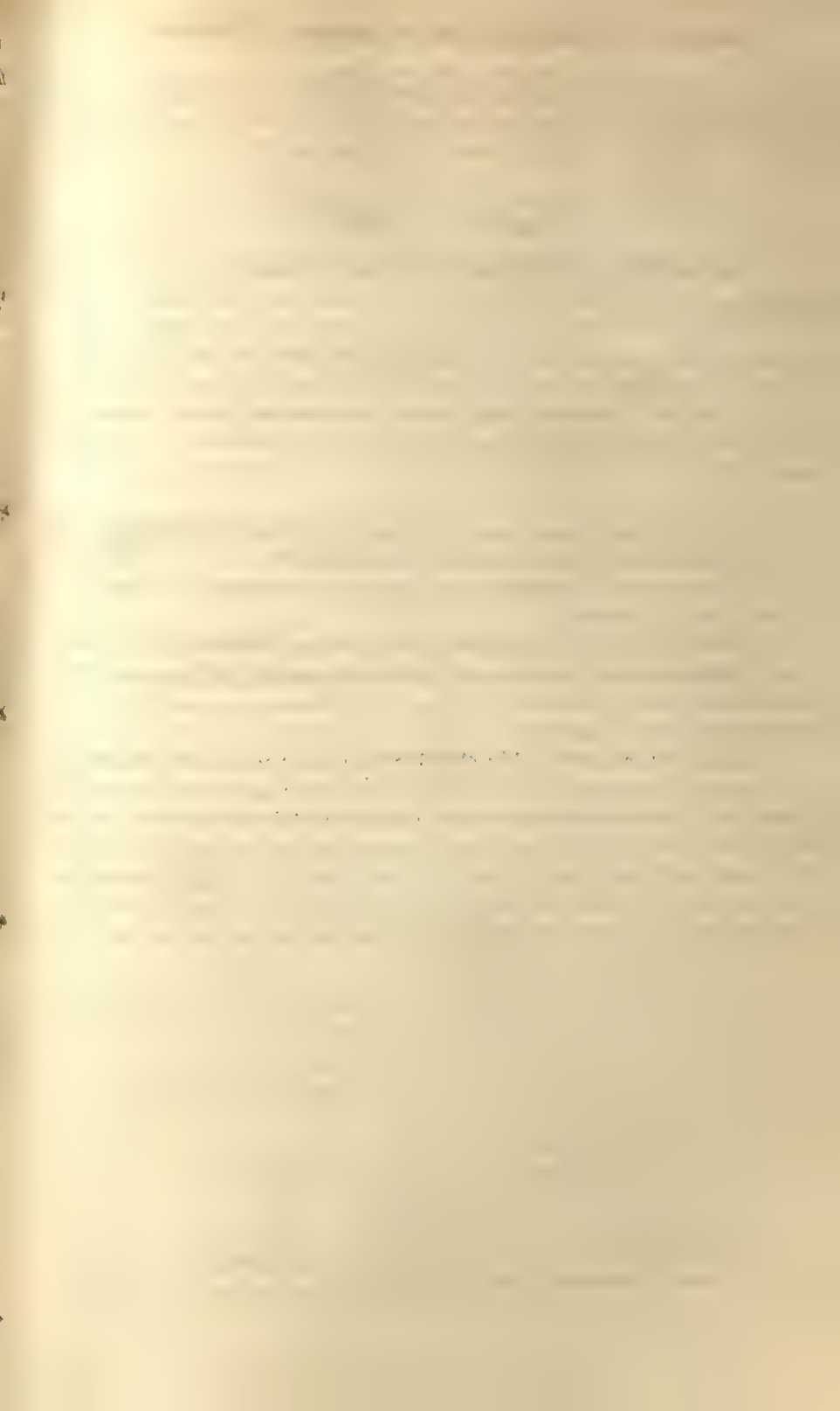
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(Manuscripts are printed in the order of final acceptance)

Ethnic group differences in children's ability to reproduce direction and orientation	3
BY JOHN R. KERSHNER	
Population density and affective relationships in three East African societies	15
BY ROBERT L. MUNROE AND RUTH H. MUNROE	
The effects of source and type of prior experience on subsequent conforming behavior	21
BY NORMAN S. ENDLER AND C. J. MARINO	
A re-examination of the vigilance hypothesis in person perception	31
BY EMIL SOUCAR AND JOSEPH DUCETTE	
Interaction of sex and training method in human multiple-choice learning	37
BY MELVIN H. MARX, DAVID W. WITTER, AND JOHN H. MUELLER	
Coalition formation under conditions of uncertainty	43
BY MAHMOUD A. WAHBA	
Group risk taking in military decisions	55
BY KENNETH L. HIGBEE	

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The effects of performing one altruistic act on the likelihood of performing another	65
BY MARY B. HARRIS	
Biracial aggression: I. Effect of verbal attack and sex of victim	75
BY WILLIAM D. GENTRY	
Redundancy and congruence of contrast stimulation as determinants of attitude change	83
BY NICHOLAS P. POLLIS, CAROL A. POLLIS, AND JAMES A. RADER	
Unintended experimenter behavior as evaluated by Japanese and American observers	91
BY YOSHIYASU UNO, JUDITH H. KOIVUMAKI, AND ROBERT ROSENTHAL	
Locus of control and expertise relevance as determinants of changes in opinion about student activism	107
BY RICHARD M. RYCKMAN, WILLIAM C. RODDA, AND MARTIN F. SHERMAN	
Some parameters in the perception of gaze	115
BY A. GEORGE GITTER, DAVID MOSTOFSKY, AND MICHAEL GUICHARD	
The effect on pain tolerance of social pressure within the laboratory setting	123
BY DONALD S. STRASSBERG AND BURTON I. KLINGER	
Strategy detection in the Prisoner's Dilemma Game	131
BY DAVID A. SUMMERS, STEPHEN PEIRCE, DALE OLEN, AND THOMAS BARANOWSKI	
The effect of skin color and physiognomy on racial misidentification	139
BY A. GEORGE GITTER, DAVID I. MOSTOFSKY, AND YOICHI SATOW	
CROSS-CULTURAL NOTES	
Predictors and determinants of educational performance in the South Pacific	145
BY MICK BENNETT	
Creative discontinuities of European schoolchildren	147
BY EARL J. OGLETREE	
REPLICATIONS AND REFINEMENTS	
Effects of the defendant's character and suffering on juridic judgment: A replication and clarification	149
BY HAROLD SIGALL AND DAVID LANDY	
Effects of noise and intolerance of ambiguity upon attraction for similar and dissimilar others	151
BY ANDREW J. BULL, SUSAN E. BURBAGE, JAMES E. CRANDALL, CHARLES I. FLETCHER, JOHN T. LLOYD, RONALD L. RAVNEBERG, AND STEVEN L. ROCKETT	
The effects of tactile stimulation on visual experience	153
BY COLIN SILVERTHORNE, CYNTHIA NOREEN, TANI HUNT, AND LESLIE ROTA	
Resistance to temptation, moral development, and perceptions of parental behavior among adolescent boys	155
BY EUGENE M. FODOR	
CURRENT PROBLEMS AND RESOLUTIONS	
I-E and orientations toward the Vietnam war	157
BY DONALD GRANBERG AND WILLIAM MAY	
BOOKS RECENTLY RECEIVED	159

ETHNIC GROUP DIFFERENCES IN CHILDREN'S ABILITY TO REPRODUCE DIRECTION AND ORIENTATION*^{1 2}

Ontario Institute for Studies in Education and University of Toronto

JOHN R. KERSHNER

A. INTRODUCTION

Several recent studies have demonstrated discrepancies in complex visual-spatial ability between sexes (9), social classes (3), and ethnic groups (10). In addition, the differences found in spatial ability between the groups that were studied were attributed to the effects of variations in environmental experiences, including free undirected activities and amount of formal education. In the present study, experiential factors that have been shown previously to facilitate the acquisition of spatial concepts were controlled in an attempt to investigate the hypothesis that enhanced spatial ability in some children may be a behavioral adaptation that compensates functionally for ethnic deficiencies in the language of the dominant culture.

The study was motivated by the author's observations while he was collecting ethnographic data and conducting unstructured family interviews and psychological tests in an east Los Angeles community that was comprised of a mixture of families with Chicano (Spanish-American) and Anglo (Anglo-Saxon) lineage. The groups appeared to be similar in social class, and the Chicano and Anglo children attended the same school and were part of the same community. The Chicano children, however, were exposed primarily to Spanish in their homes, whereas English was the predominant language medium for their educational experiences. In comparison to their Anglo age-related peers, the Chicanos were experiencing school difficulties and expressed a dislike for school. The author observed that although the Chicano children at home and in school were less spontaneous and articulate verbally than the Anglo children, they appeared alert, understood directions well, and, in particular, the Chicano children seemed to be extra-aware of their spatial surroundings. The Chicanos adapted quickly to the spatial relations of the local school, as

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¹ The study was conducted in cooperation with the Glassel Park Growth and Development Center and the Glassel Park School in Los Angeles.

² The study was supported, in part, by a grant from the California Department of Education.

well as the testing Center that was used for the study. Also, it was observed at the Center that Chicano children seemed to take their play seriously, rapidly becoming engrossed individually in games and puzzles even though brothers and sisters were nearby. Anglo children, on the other hand, were oriented more toward people, competing for adult attention, and they enjoyed working at games and puzzles with other children.

Evidence shows that different children can use different environmental cues in adapting to various learning situations and that the same problem may be perceived and processed through spatial or verbal cognitive styles (4, 6). In addition, Levy-Agresti (8) found evidence that spatial and verbal methods for processing sensory information were separated neurophysiologically and localized in the right and left cerebral hemisphere respectively. Furthermore, Sperry (12) has demonstrated that patients without a corpus callosum, the major commissure connecting right and left hemispheres, were disorganized spatially but had compensated for their lack of spatial ability by achieving an above normal verbal intelligence. Could it be, therefore, that there are differences in complex visual-spatial ability between Chicano and Anglo children and that these differences might be explained partially by the reciprocal polarization of spatial and verbal information processing strategies?

B. Method

The first phase of the study was to determine whether Chicano and Anglo families living in the same community could be equated on measures of socioeconomic status and the extent to which they provided home experiences that are known to facilitate spatial development. The second phase of the study was based upon finding elementary-school-age children in these families who were reasonably similar in sex, chronological age, and general intelligence. The concluding aspect of the study was to assess the Chicano and Anglo children on the ability to conserve multiple spatial relations and, then, to compare their spatial performance with a measure of vocabulary recognition.

1. Subjects

There were 30 Chicano and 15 Anglo families involved in the ethnographic study, each of whom had a child enrolled in the local elementary school. From among these, eight bilingual Chicano families and eight Anglo families agreed to participate in the experiment. The Chicano children (four males and four females) ranged in age from six to 11 with a mean age of eight years, six months. The Anglo children (four males and four females) ranged in age from six to 12 with a mean age of eight years, two months. Tests computed

between the chronological ages of males and females and between the chronological ages of the Chicanos and Anglos produced t values of .64 and .58, respectively, indicating that the groups were similar in chronological age composition. All of the families in both groups were intact, and none of the mothers worked. Also, the average number of children in the families of both groups was three.

2. Procedure

Data were collected by the author and five graduate students. One of the testers had resided in the community for several years, and she and one of the graduate students were conversant in Spanish. However, since the families were bilingual and the criterion home data were physical and behavioral observations rather than verbal reports, a high degree of language proficiency in Spanish was not necessary to the conduct of the experiment.

a. Home facilitation of spatial development. The data on the extent to which families had environments that might be expected to facilitate spatial ability were obtained during two to four home visits of one to two hours each. The measuring instrument was an adaptation of the Toronto Family Functioning Scale used previously by Kershner (5). As used before, the technique employed consisted of creating a family protocol from observations in the home and using this as a basis for ratings on the major categories of home facilitation (physical space, diversity of stimulation, free self-directed movement activities, parental responsiveness to investigativeness, and exploratory curiosity). In the present study, the upper limit of scoring each item was maintained at 10 points, and a facilitating index was developed on the basis of the average of the four major areas.

The original procedures were followed in the collection of family data. Lengthy observation protocols were prepared and each scored by four "naive" raters according to standardized instructions. The raters were not supplied any information regarding the research design or purpose. Then the modal value of the four raters' scores was selected as the appropriate score. Analysis of the results (see Table 1) indicated that the home situations were similar with respect to experiential factors that have been shown to facilitate the acquisition of spatial concepts.

b. Social class placement. Families were measured on Warner's Index of Status Characteristics (13) to determine if there were differences between groups in social class. The index was in numerical form, with small values indicating high social status, and large values indicating lower social status. Four weighted factors (occupation, source of income, house type, dwelling)

TABLE 1
COMPARISON OF CHICANO AND ANGLO FAMILIES ON THE
FAMILY FACILITATION SCALE

Variables	Mean	SD	<i>t</i>
Physical space			
Chicano	23.66	10.47	1.37
Anglo	17.33	7.90	
Diversity of stimulation			
Chicano	16.66	7.97	.25
Anglo	15.66	8.28	
Self-directed movement			
Chicano	14.88	4.58	.70
Anglo	12.88	6.70	
Parental responsiveness			
Chicano	10.11	4.72	.21
Anglo	9.66	3.59	
Total Facilitating index			
Chicano	65.33	22.49	.82
Anglo	56.33	21.61	

were incorporated into the scale, with occupation carrying the most weight and dwelling area the smallest.

Analysis of the Warner Index total score for social class placement revealed a mean of 44.63, $SD = 9.09$ for both groups combined, placing the families within the lower-middle socioeconomic range. Table 2 shows that although

TABLE 2
COMPARISON OF CHICANO AND ANGLO FAMILIES ON THE
WARNER SCALE OF SOCIAL CLASS

Variables	<i>N</i>	Mean	SD	<i>t</i>
Occupation				
Chicano	8	16.50	5.07	2.61
Anglo	8	10.67	3.27	
Source of income				
Chicano	8	12.38	.99	1.11
Anglo	8	11.67	.94	
House type				
Chicano	8	11.00	2.83	1.05
Anglo	8	12.33	2.21	
Dwelling area				
Chicano	8	8.67	1.63	.22
Anglo	8	8.44	1.57	
Total Warner Index				
Chicano	8	48.50	9.08	1.31
Anglo	8	43.11	6.47	

there were no differences between groups on the total Warner Index, the Anglo fathers had a lower numerical score in type of occupation. Additional inquiry revealed ($p < .05$, t test) that the Anglo fathers had significantly more years of formal education than the Chicano fathers. Nevertheless, with the exception of father's occupation and education, the groups appeared reasonably matched overall in social class.

c. Children's intelligence quotients. Both groups of children were administered individually the Slosson Intelligence Test (11) to determine if there were any differences in general intellectual functioning. The Chicano children scored a mean IQ of 103, $SD = 9.3$, and the Anglo children scored a mean IQ of 99, $SD = 16.4$. Mann-Whitney U analysis comparing the IQ scores between groups yielded a U value of 28 ($p < .36$), indicating that the Chicano and Anglo children were similar in general intelligence.

In summary, the Chicano and Anglo families were found similar in the extent to which their home environments provided factors known to facilitate children's spatial development. The families were also found to be representative of a similar social class. The groups of elementary-school-age Chicano and Anglo children from these families were similar in sex ratio, chronological age, and general intelligence.

d. Criterion testing. The Ss were tested individually on the Peabody Picture Vocabulary Test, PPVT (1), which assessed their hearing vocabulary. It was reasoned that the PPVT was a more valid measurement of language knowledge than other verbal tests because the PPVT did not require reading or speaking skills to respond correctly. To ensure maximum comprehension, the test items were presented verbally in Spanish and in English to the Chicano children.

The conservation of multiple spatial relations was chosen as the main dependent measure. Spatial conservation requires a reversible memory image, and evidence of its successful acquisition is the ability to perceive, manipulate mentally, and reproduce figure orientations and directional movements. The space test apparatus (see Figure 1) had been developed previously (6, 7) and consisted of a wooden T that could rotate 360 degrees about its central pivot point. Attached to and centered above the central pivot was a wooden figure (model house) that was shaped like a U and could also be rotated 360 degrees about its polar axis. The T had a track running the length of both of its axes along which a small model car could be directed manually. The apparatus was set up in a vertical position so that Ss could work comfortably with it when seated.

The approach taken was to present the S with various combinations of

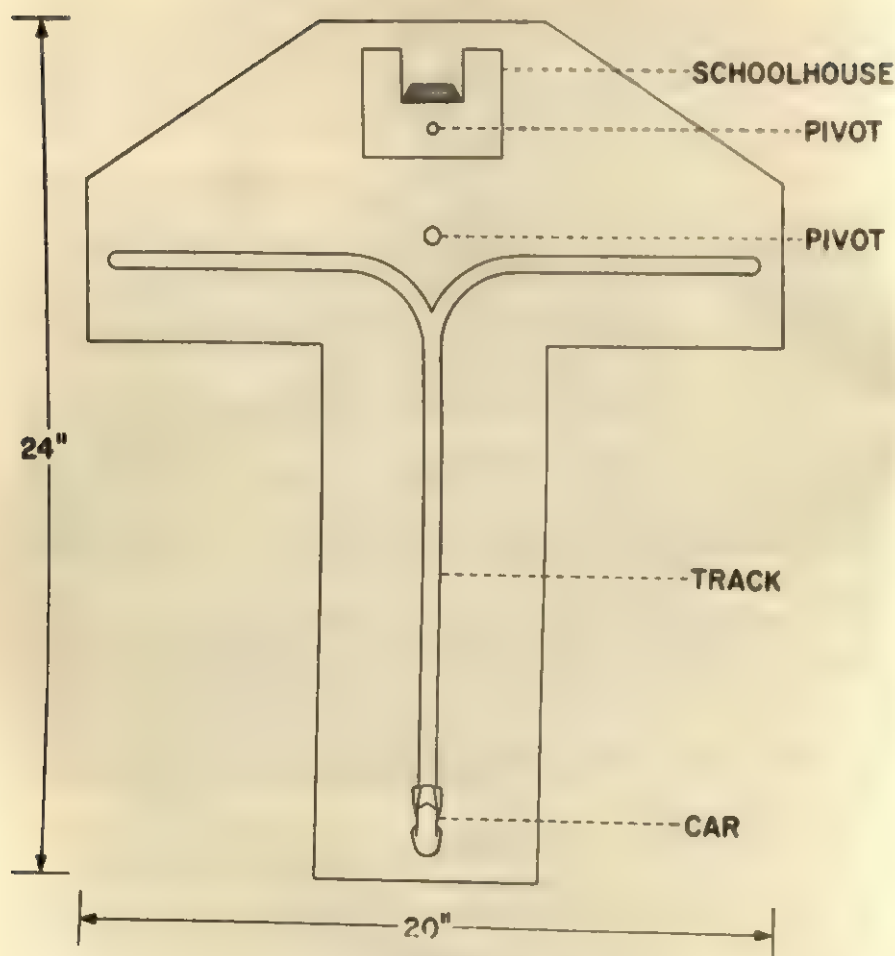


FIGURE 1
KERSHNER SPACE TEST

figure orientations and directional movements and to require the *S* to reproduce the space relations on similar but rotated test fields. Previous research (7) has demonstrated that the ability to reproduce sequentially reorientations and displacements of objects in space is a high-level cognitive skill.

In order to measure spatial conservation, two field configurations were created (see Figure 2) by combining specific figure orientations with either an upright or rotated T, and each was presented to *S*. In each configuration there

was an axis of separation produced by moving the car to one side of the figure (directing attention to that side), thus forming an axis of separation (between the figure and center of attention) that was perpendicular to the movement and perpendicular to the figure axis of symmetry. Past research (2, 7) has shown that such "mirror" relative positions where there is an axis of separation perpendicular to an object's axis of symmetry were much more difficult to deal with than the same objects paired in different relative orientations. Following the presentation of one field configuration, with the T in a preset rotational position, S was taken to an adjacent room and tested on a similar apparatus for his ability to reproduce the space relations represented by the A's field configuration. The S was required to orient correctly the model house and to push the car in the correct direction past the model house. Then

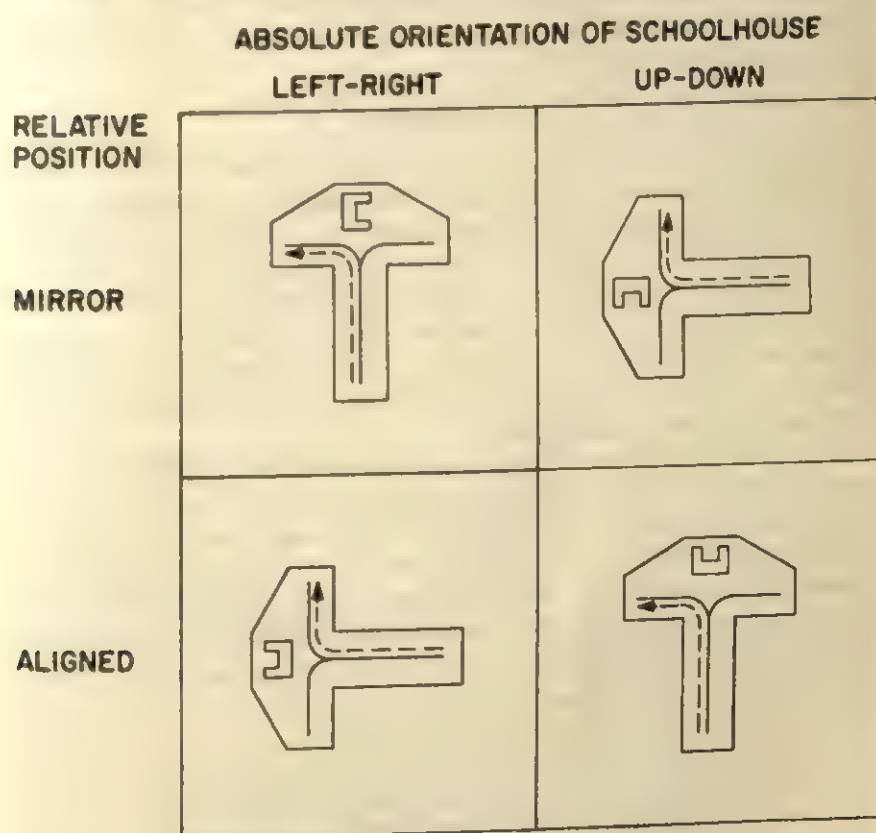


FIGURE 2
FIELD CONFIGURATIONS

S was told to close his eyes while *E* rotated the *T* to its second predetermined position (copy, 90 degrees right, 90 degrees left, inverted 180 degrees). *S* was again required to reproduce the spatial relations of the original field configuration that had been experienced in the first room. In continuing fashion, *S* was tested for his ability to remember and reproduce the original field configuration under all four *T* rotations. After the scores for the first field configurations were obtained, *S* was returned to the first room and exposed to the second configuration following the same routine as with the first. In this way, each *S* was exposed to the two field configurations and was tested for his ability to reproduce each one on four different rotations of the *T*. *S* was given one point for each correct reproduction of the car's directional movement and one point for each correct reproduction of the figure's orientation. There were eight points for each field configuration including four points for direction and four points for orientation. Thus, the spatial task yielded 16 possible points per testing session.

C. RESULTS

Hypothesis 1. Anglo children are better than Chicano children in matching orally presented words with visual two-dimensional representations of the objects that the words symbolize. In order to test Hypothesis 1, the PPVT scores of the Chicano and Anglo children were compared. The Chicanos had a mean score of 90.6, $SD = 20.7$ and the Anglos had a mean score of 100.6, $SD = 14.24$. Mann-Whitney *U* analysis comparing the PPVT scores between groups produced a *U* value of 4 ($p < .001$) indicating that the Anglo children were better than the Chicano children in the acquisition of verbal concepts. Hypothesis 1 is accepted.

Hypothesis 2. Chicano children are better than Anglo children in complex visual-spatial ability. To test Hypothesis 2, the spatial scores of the two groups were analyzed. The Chicano children had a mean score of 5.9, $SD = 4.1$ and the Anglo children had a mean score of 4.6, $SD = 1.7$. A Mann-Whitney *U* test comparison between groups yielded a *U* value of 11 ($p < .014$) thus supporting Hypothesis 2; the Chicano children were better than the Anglos in spatial ability.

D. DISCUSSION

The results suggest qualitative ethnic group differences between Chicano and Anglo children in information processing strategies. Finding that the Chicano children were superior in reproducing spatial orientation and direction following reorientations of the test field supported the clinical observa-

tion that, in contrast to the disinterest in spatial relations seen in Anglo children and the Chicanos' own deficiencies in language and language-related school tasks, Chicano children were well-oriented to the dimensionalities of visual-space. It appeared from the present study that the Chicano children could be categorized as analytical in cognitive style, attendant to the spatial relationships of their environment, and less inclined toward a verbal information-processing mode. On the other hand, the Anglo children tended to be global, more vocabulary conscious, and less prone to rely upon spatial cues.

Theoretically, the study confirmed the position that spatial and language skills in some children may be inversely related and that deficiencies in one area may be compensated for by advanced abilities in the other. Also, the study added some support for the supposition that different children can, perhaps, use different environmental cues in adapting to various learning situations. Still open to experimental question, however, is whether the same child has the flexibility to shift styles, given the right circumstances, whether a particular child might be better off if he were taught a different strategy, and the related question of the relative part played by genetics and instruction or environment.

The two groups of children were reasonably matched in social class and on the facilitating index, as well as attending the same school, a part of the same community, and similar in general intelligence. On the other hand, there was a significant difference between the groups in the type of occupation and amount of education received by the fathers, with the Chicano fathers in a lower status on both factors. But of most significance to an environmentalist interpretation was the fact that the Chicano children were exposed to a different language environment at home than at school; and this factor may have compounded their difficulties in adjusting to the verbal demands placed upon them in school. Also, in reverse fashion, the Chicano's efforts to adapt to the language of the dominant culture in school appeared to have a deleterious effect upon the amount and nature of verbal communication that occurred in their homes. It was observed during home visits to the Chicano families that verbal communication between the parents and children was at a minimum and seemed to be restricted to necessary and brief comments. Apparently, even though the Chicano families were considered bilingual, the Chicano children were not proficient in either language. The mutually negative effect of having two languages but being inferior in both, in the respective environments where each language was needed to communicate, may well have reinforced the Chicano children to perceive, think, and, in general, be more cognizant of space to the prejudice of their language environment.

E. SUMMARY

During the course of an ethnographic study it was observed that Chicano and Anglo children differed qualitatively in their adaptive responses to social situations. The Chicanos showed an interest in the details and organization of their spatial surroundings, whereas the behavior of the Anglos was characterized by spatial remoteness and the tendency to seek out verbal interactions with people rather than isolated play. The hypothesis was advanced that Chicano children might be better than Anglos in conserving multiple spatial relations and that their superiority in dealing with spatial relations might, in turn, be explained as a form of functional compensation for relatively lower achievement in language. Eight Chicano children were then compared to eight Anglo children in spatial and language abilities. The group lived in the same community, attended the same school, represented a similar social class, and came from families who provided an equal amount of stimulation and opportunity for free self-directed movement experiences. The study showed that the Chicanos were better in spatial ability and poorer in language comprehension in comparison to the Anglo children, supporting the categorization of the Chicanos as "analytic-spatial" and the Anglos as "global-verbal" in cognitive style. The findings were interpreted as demonstrating ethnic group differences in information processing strategies and the polarity of verbal and spatial skills in some children. The possible influence of innate and experiential factors in producing the results was discussed.

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Department of Special Education

The Ontario Institute for Studies in Education

252 Bloor Street West

Toronto 5, Ontario, Canada



POPULATION DENSITY AND AFFECTIVE RELATIONSHIPS IN THREE EAST AFRICAN SOCIETIES*¹

Departments of Anthropology and Psychology, Pitzer College

ROBERT L. MUNROE AND RUTH H. MUNROE

A. INTRODUCTION

Animal research (1, 2) indicates that high-density conditions strain the adaptive capacity of the organism and produce negative interaction patterns. Among human beings, even short-term crowding has been shown to raise the level of negative affect (5). The present paper is concerned with the effects, on affective expression, of density conditions that are milder than those in the animal studies, but possibly more severe than those produced experimentally for short periods among humans. Specifically, investigation is made of the effects of very high and rapidly increasing population density on affective relationships and attitudes in three closely situated societies in rural East Africa.

The societies under consideration—the Logoli, Gusii, and Kipsigis—all have grown in tribal size during this century, but the Logoli have experienced a population increase of such proportions that they have become the most crowded group in East Africa. In the 1962 census of Kenya, the density of the Logoli was 1440 per square mile, the highest rural density among the 1500 East African units which extended over 20 square miles or more (12). There are a few nonurban areas around the world even more crowded than Maragoli (where the Logoli live), notably in parts of Asia (4), but an exacerbating feature of the Logoli situation has been the rate at which the population has increased. After careful analysis, Stevenson (13) concluded that in the late 19th century Maragoli held about 70 persons per square mile. This would indicate a twentyfold increase in less than 100 years, a figure which, though improbably high, if even approximately accurate, would indi-

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¹ The research was carried out in 1967 while the authors were members of the Child Development Research Unit (John Whiting, Director), University of Nairobi, and was supported by the Carnegie Corp. of New York. The authors are indebted to the following for their aid in various phases of the research: Hudson Adenya, Gordon Ahlschwede, June Charles, Josiah Embego, Myra Kagasi, Joyce Mmene, Fanuel Wakhu, Rodger Webster, Beatrice Whiting, and John Whiting. The cooperation of the Kenya Ministry of Education and the headmasters and students of the participating secondary schools is gratefully acknowledged.

cate the likelihood of rapidly accelerating demands on the adaptive capacities of individuals in Logoli society.

In contrast to the Logoli situation, the reported Gusii density in 1962 was 691 per square mile, while the Kipsigis density was but 253 (7). The research discussed above would prompt the prediction that personal relationships among the Logoli may be less positive than relationships among members of the other two societies. Although some suggestive ethnographic evidence was available from the Logoli to support this view—for example, an increase in witchcraft accusations, heightened conflict between brothers who are vying for ever smaller inheritances, the disappearance of granaries in recent years due to fear of theft—it was not systematic and not directly comparable to data from the Gusii and Kipsigis. Therefore, the ethnographic level was abandoned as a possible basis for investigation of the hypothesis, despite the inevitable loss in behavioral realism and in fullness of interpretation. Instead, standard measures were administered to a sample of secondary school students from the three tribal areas. The measures dealt with affiliative tendencies, both (reported) behavioral and projected, and with evaluative conceptions of others.

Although the students were relatively acculturated as compared with the average tribal member, almost all had been born and reared in the traditional tribal areas. The possibility existed that societal differences on the measures might be due to the specifics of the school situation, but the fact that there were at least two schools tested in each tribal area increased the probability that any findings could be attributed to past experiences within the society.

B. METHOD

1. Subjects

The first and second forms of both a male and female secondary school were tested in each tribal area, as well as one mixed school in the Logoli area. The mean reported age of the students was just under 17 years. All Logoli, Gusii, and Kipsigis students who were attending the schools located in their own tribal areas were included in the sample. Students who were members of other tribal groups were excluded. The total sample was 375.

2. Measures

a. Hand-holding with friends. One manifestation of friendship among young Kenyan males and females is holding of hands with members of one's own sex. (Very little hand-holding is seen between males and females.) *Ss*

were asked how frequently, on a five-point scale, they held hands with their best friends.

b. Short-term memory for affiliative words. Ss were presented with 18 words to be memorized. Each word was related to one of six psychological concerns or characteristics: e.g., affiliation, achievement, male and female sex role. The words were equated for length and degree of familiarity. The three affiliation-related words were friend, help, and party.

The 18 words were printed in three columns on a large board which was held up at the front of the testing room. Prior to presentation, Ss were told: "Now, we are going to show you a list of words. Read the list quickly. Try to remember as many of the words as you can. Later, you will be asked to write down as many of the words as you can remember. We are going to show you the words for two minutes." The list was displayed for the two minutes, then withdrawn. After the interposition of a six-item design choice task (three minutes in duration), Ss were given three minutes to write down as many of the listed words as they could recall.

c. Semantic differential evaluation of roles (11). Four family roles (father, mother, daughter, son) plus the concept of "self" were rated by Ss on several five-point adjectival scales. The adjectival contrast of relevance to present purposes is the "good-bad" distinction, used in density research by Griffitt and Veitch (5).²

3. Procedure

All Ss were tested in groups. The measures used in the present study were only a portion of the total administered in a day-long testing session. Instructions were given in English by one of the authors, and all written work was done in English by Ss. The authors and a number of Kenyan university students were present during the sessions.

C. RESULTS

For hand-holding with friends, a majority of Ss in all three societies indicated that they held hands "very often" i.e., chose the extreme category. The Logoli, however, were lowest in this respect, 59% *vs.* 62% for the Gusi and 72% for the Kipsigis. The Logoli-Kipsigis comparison was significant ($\chi^2 = 4.69$, $p < .025$, one-tailed test).

The affiliative words comprised three of the 18 printed on the board, so that they should have constituted approximately 1/6, or 16.7%, of all words

² The present study was designed and carried out prior to knowledge of the Griffitt and Veitch study.

remembered. However, all three societies were below this level—the Logoli at 12.95%, the Gusii at 16.42%, and the Kipsigis at 14.61%. Despite the generally low average level, the Logoli were significantly below the other two societies (Logoli-Gusii, $z = 3.45$, $p < .001$; Logoli-Kipsigis, $z = 2.11$, $p < .02$, Mann-Whitney U test).

On the semantic differential, 20% of the sample was lost due to perseverative responses for all concepts on the "goodness" dimension. For the remainder, the Logoli Ss evaluated family members and self as less good than did members of the other two societies (Logoli-Gusii, $z = 2.97$, $p < .002$; Logoli-Kipsigis, $z = 1.96$, $p = .025$, Mann-Whitney U test).

Thus the hypothesis that the densely populated Logoli would display less positive attitudes toward others was supported in five of six comparisons.

D. DISCUSSION

A finding by Edgerton (3) in his work on ecology and values in four East African societies is in accordance with the results of the present study. Individuals living in crowded residences had a lower desire for friends ($r = -.55$). However, desire for friends was not related to overall group density.

The present findings, though positive, by themselves do not help to identify the sociobehavioral process(es) by which high-density effects might be mediated in human beings. There are at least three possibilities. One might be termed a quantitative action; i.e., crowding may produce an increase in sheer frequency of interaction, so that relationships deteriorate due to overload. However, on an impressionistic basis, it may be said that the Logoli did not seem to maintain an abnormally high rate of interaction.

A second possibility is what might be termed a competitive action. Crowding may produce sharp competition over resources, so that the quality of interaction is made more negative. In support of such an interpretation, it may be noted that the Logoli display continually heightening conflict over valued but increasingly scarce land (9), and concomitant concerns about adequacy of food (10).

The third interpretation would be in terms of a balancing action. That is, diminution of positive affect may be a means of maintaining input at a manageable level rather than either a reflection of actual interaction overload or of already negative interaction. Along these same lines, Milgram (6) has interpreted many of the psychological characteristics of city dwellers as adaptive responses to potential overload. Two such responses are the blocking of reception prior to input, as when the urbanite assumes an unfriendly countenance and thereby discourages others from initiating contact, and the

diminishing of input intensity, with only weak and relatively superficial forms of involvement with others allowed. The Logoli also display numerous other characteristics which might be seen as adaptive responses to high density (and/or to scarce resources): e.g., a high rate of emigration, intensified land use, stress on education, and a strong achievement orientation (8). As Zlutnick and Altman (14) have noted, although crowding is implicitly assumed to have only adverse effects, coping responses to high-density conditions should be expected as well.

On the basis of available evidence, the second and third interpretations, or some combination of them, seem plausible; while the first appears less likely to be valid. But present data do not admit of an adequate choice among these possibilities.

E. SUMMARY

Previous research indicated that crowding raises the level of negative affective expression. It was hypothesized that among three East African societies the highly crowded Logoli (population density = 1440 per square mile) would have less positive relationships than the Gusii (density = 691) and Kipsigis (density = 253). Test and questionnaire data taken from a sample of 375 secondary-school students in the three tribal areas indicated that the Logoli (a) were self-reportedly less likely to hold hands with friends (on one of two societal comparisons), (b) could remember fewer affiliation words (friend, help, party) on a short-term memory task, and (c) evaluated family-role incumbents plus self as less "good" on a semantic differential task. Three possible interpretations of the findings were briefly discussed.

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Department of Anthropology

Pitzer College

Claremont, California 91711

THE EFFECTS OF SOURCE AND TYPE OF PRIOR EXPERIENCE ON SUBSEQUENT CONFORMING BEHAVIOR*¹

York University

NORMAN S. ENDLER AND C. J. MARINO

A. INTRODUCTION

The focus of recent research on conformity has expanded to include not only the behavioral consequences of group pressure (*viz.*, conforming behavior) but also the *processes* (18) affecting susceptibility to those pressures. In line with this expansion of focus there has been an increasing emphasis on the antecedents of the conforming process. This study was designed to investigate the role of prior experience in the group, reinforcement, and sex, in the conforming process.

The classic Asch (2) conformity experiment, which presented the naive *S* with a contradiction between objective sensory information and the unanimous judgment of others, focused on the consequences of that dilemma. Subsequent research efforts were directed toward antecedent-consequent relationships—for example, the effects of group characteristics, such as size, cohesiveness, and status; situational variables (*e.g.*, 6, 9, 12, and 26); and personality factors (*e.g.*, dependence, authoritarianism)—largely neglecting the processes in which these relationships are embedded. Concurrent with the development of dynamic social theories, such as exchange (20, 21, 29, 31), reciprocity (16), and reactance (7), conformity research evolved toward a process orientation. Crutchfield (9) introduced the notion of authority agreement and disagreement with *Ss*, as an important dimension in susceptibility to social influence, and this was expanded and related to social learning theory by Endler (13) and by Endler and Hoy (14). Recently, Hollander, Julian, and Haaland (19); Julian, Regula, and Hollander (23); and Julian, Ryckman, and

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Hollander (24) have focussed on the effects of levels of prior group support (mediated by task confidence) on subsequent conforming behavior. Basically these studies have found that unanimous agreement from peers leads to high dependence on the group and thus to high subsequent conformity.

The work of Hollander, Julian, and their colleagues (cited above) was primarily concerned with the effects of prior group support (i.e., the number of people in the group agreeing with the subject and the number of trials in which the entire group agreed with *S*) on subsequent conformity. The present study was designed to analyze two dimensions of prior experience: *type* (agree-disagree) and *source* (peer-authority). While the work of Hollander and his colleagues investigated one type of prior experience (viz., percent of the group agreeing with *S*), the present study investigates the effect of *both* prior agreement and prior disagreement on subsequent levels of conformity. In addition, this study is designed to elucidate the effects of the *source* of this agreement or disagreement. It seems logical to expect that agreement or disagreement from an authority figure will have different effects on conformity than will agreement or disagreement from the *Ss'* peers.

This study also investigates the effects of reinforcement for conformity and nonconformity, as well as allowing for the analysis of sex differences in response to both type and source of prior experience and reinforcement. Endler (13) and Endler and Hoy (14) found that reinforcement for agreeing with the contrived group consensus led to increased conformity and conversely reinforcement for disagreeing led to decreased conformity. Asch (3); Applezweig and Moeller (1); Beloff (4); Crutchfield (9); Endler (13); Hollander, Julian, and Haaaland (19); Julian, Regula, and Hollander (23); Julian, Ryckman, and Hollander (24); and Tuddenham (32) have all found that females conformed more than males. It is expected that adolescents (the sample studied) will conform more to their peers than to an authority figure, and that reinforcement for agreeing with the contrived consensus in a social pressure situation will produce more conformity than reinforcement for disagreeing. Finally, it is expected that females will conform more than males because of differing sex roles. According to Krech, Crutchfield, and Ballachey (25), female roles involve dependence upon the group and avoidance of disagreement with others, while male roles emphasize independence.

B. METHOD

1. Apparatus

A Crutchfield-type social communications apparatus (13) was used to record *Ss'* responses and to communicate agreement-disagreement and the

contrived responses of each *S* to every other *S*. This apparatus was housed in a mobile laboratory. The task was the same for each *S* on all trials. *Ss* were asked to select one of five alternative answers to each of 40 perceptual or factual questions (13, 14). The questions and alternative answers were projected on a screen directly in front of the *Ss*. Twelve questions were used in the prior experience portion of the experiment and the remaining 28 to assess the effects of that experience on susceptibility to social influence.

2. Subjects

All *Ss* were enrolled in the sixth and seventh grades of a senior public school in Ontario and were between 12 and 13 years of age. Two-hundred and seventy-one *Ss* ($M = 138$; $F = 133$) were tested. *Ss* were tested in groups of five, and the members of each group were always of the same sex. *Ss* were randomly assigned to the cells of a $2 \times 2 \times 2 \times 3$ factorial design (Sex \times Type of Prior Experience \times Source of Prior Experience \times Reinforcement). There were between 10 and 15 *Ss* in each cell of this design.

3. Procedure

There were 12 pretrials and 28 standard conformity trials. The pretrials comprised seven critical and five buffer trials. On each of the critical trials *Ss* responded first and were then given information as follows (depending on their experimental condition).

a. *Peers-Agree*. *Ss* were informed on each of the seven critical trials that either 3 or 4 of the others *agreed* with their choice.

b. *Peers-Disagree*. *Ss* were informed on each of the seven critical trials that either 3 or 4 of the others *disagreed* with their choice.

c. *Authority-Agree*. *Ss* were informed by *E* that the answer they had chosen was *correct* on each of the seven critical trials.

d. *Authority-Disagree*. *Ss* were informed by *E* that the answer they had chosen was *incorrect* on each of the seven critical trials.

In both of the latter cases (authority-agree and authority-disagree) the "authority" was one of the two *Es*. *Ss* had been informed by their principal and their classroom teacher that they were going to be tested by a research team from the university. Upon entering the situation *Ss* were greeted by a same-sex *E* (over the age of 27) dressed in a white lab coat, who explained the procedure to them and informed them of the correct answers on sample trials. In this way *E* was established as an "authority."

On the "buffer" trials *Ss* in all groups simply responded and received no

information as to the number of others agreeing or the correctness of their responses.

The 28 "standard" trials were administered identically to all Ss regardless of the type and source of their prior experience. Sixteen of these trials were critical and 12 were buffer trials. The order of buffer and critical trials was random. On critical trials Ss responded fourth or fifth *after* having seen the contrived unanimous responses of the other Ss. On the buffer trials Ss responded in first, second, or third positions. Reinforcement was affected on the critical trials by means of a red "false" light and a blue "true" light. One third of the Ss were informed that their choices on critical trials were *true* whenever they *agreed* with the group and false whenever they *disagreed* (TA); one third were informed that their choices on critical trials were *true* whenever they *disagreed* and false whenever they *agreed* with the group (TD); and one third were given *no* true-false feedback (N). This procedure is described more fully elsewhere (13, 14).

The same procedures were followed for males and females, yielding 12 male groups and 12 female groups.

To sum up, the experimental design involved four independent variables; source of prior experience (peer, authority), type of prior experience (agree, disagree), sex (male, female), and reinforcement (TA, N, TD). The dependent variable was conforming behavior—i.e., the number of times a S agreed with the contrived group consensus on the 16 critical trials.

C. RESULTS

To test the hypothesis that conformity is a function of source (peer *vs.* authority) and type (agree *vs.* disagree) of prior experience, of sex (male *vs.* female), and of reinforcement (TA, N, TD), the conformity data² were analyzed by means of a four-way ($2 \times 2 \times 2 \times 3$) analysis of variance. The main effects of sex ($F = 7.37$; $p < .01$), source of prior experience ($F = 5.95$; $p < .05$), and reinforcement ($F = 42.97$; $p < .01$) were significant as was the four-way interaction ($F = 4.35$; $p < .05$).

There was a four-way (Sex \times Source \times Type \times Reinforcement) significant interaction. Table 1 presents the relevant means for each group.

Females conformed more than males, and all Ss conformed more when the source of prior experience was peers than when it was an authority figure. With respect to reinforcement the order of conforming behavior from most

² There were no significant differences between Ss conformity to perceptual and factual items, so the Ss scores on the two sets of items were summed to obtain a total conformity score.

TABLE 1
MEAN CONFORMITY SCORES FOR MALES AND FEMALES FOR SOURCE AND
TYPE OF PRIOR EXPERIENCE FOR EACH REINFORCEMENT GROUP*

Sex and Source of prior experience	Type of prior experience					
	Agree			Disagree		
	Reinforcement condition			Reinforcement condition		
	True- Agree	Neutral	True- Disagree	True- Agree	Neutral	True- Disagree
	Mean	Mean	Mean	Mean	Mean	Mean
Males						
Authority	10.10	5.70	3.46	6.20	6.60	4.60
Peer	7.63	7.70	5.82	8.80	5.88	4.58
Females						
Authority	7.90	8.00	6.00	8.00	7.60	3.50
Peer	10.50	7.80	5.00	11.00	8.93	4.64

* The *ns* upon which these means are based varied between 10 and 16.

to least was TA, N, and TD, with the TA group conforming significantly more than the N group, which in turn conformed significantly more than the TD group.

D. DISCUSSION

The results indicate that the *source* (peer *vs.* authority) of prior experience had a significant effect on subsequent conformity, but the *type* (agree *vs.* disagree) of prior experience had no reliable subsequent effect. Both the reinforcement and sex variables had significant effects on conforming behaviour.

1. Prior Experience

Individuals who have experienced success in a group feel more free to deviate from the group norm than those who have not (11, 17). It was therefore surprising to find that Ss who had experienced prior agreement (support) did not subsequently conform significantly less than those who had experienced prior disagreement (note however, that in the Hollander and Julian series of experiments, discussed in the introduction, unanimous agreement from peers induced higher subsequent conformity). Possibly the *type* of prior experience (agreement *vs.* disagreement) was masked by the influence of the *source* of prior experience (peer *vs.* authority) or the experimental manipulation was not successful.

The *source* of prior experience had a significant effect. Ss who had previously interacted with peers conformed significantly more than those who had previously interacted with the authority figure (*E*). Since Mausner (27),

and Cole (8) had previously found that *Ss* conform more to prestigious figures than to nonprestigious ones, these results may seem surprising if we assume that the authority figure (*E*) is perceived as more prestigious than one's peers. However, Berenda (5) found that 12- and 13-year-olds (the same as the *Ss* in the present sample) conformed more to their peers than to their teacher (an authority figure). Acceptance by one's peers is a particularly potent motivational dimension for the North American adolescent, and indeed conformity can be viewed as an ingratiating tactic (22). In terms of this experiment then, the source of prior experience (the *who*) is more important than the type of prior experience (the *what*) in affecting subsequent conforming behavior.

An alternative explanation as to why the peer source induced more conformity than the authority figure is that *Ss* in the authority figure condition may perceive themselves as more confident of their own judgments and subsequently more independent of peer group feedback. Ettinger, Marino, Endler, Geller, and Natziuk (15) found that *Ss* who perceive themselves as more competent than a group conform less than those who perceive themselves as less competent than a group.

The role of the experimenter as a source of reinforcement may produce confounding effects on studies on conformity (30). Schulman has suggested that conformity "would be decreased by normative conformity to the experimenter" (30, p. 27). This may be another explanation as to why *Ss* conformed less to an authority figure (*E*) than to their peers.

2. Reinforcement

The findings that reinforcement for agreement with the group leads to increased conformity, and reinforcement for disagreement to decreased conformity, confirms the results of Endler (13) and Endler and Hoy (14). However, conforming behavior is not only influenced by reinforcement (social learning) but also by the source of prior experience. The greatest amount of conformity occurred when individuals were reinforced for agreeing and had in addition had similar prior experiences in a group composed of their peers.

3. Sex

Females conformed more than males and these results replicate those of Endler (13). In terms of cultural expectations, our society expects, teaches, and to some extent encourages females to be dependent in groups, to be submissive towards males, and more compliant in general than males. For males, the emphasis is more on independence, assertion, and achievement. In fact,

McClelland (28) has found that males focus more on vocational and occupational achievement, whereas females focus on achievement in terms of interpersonal relationships. One would conclude that males are more task oriented and females are more group (or people) oriented and therefore that females would conform more.

4. Conclusions

It was found that those who had prior experiences with peers conformed more than those who had their prior experiences with an authority figure. The type of prior experience (agreement or disagreement) had no effect. One possible confounding effect was that logically the type of prior experience with peers was in terms of agreement or disagreement (normative influence or social support), while the type of prior experience with an authority figure was in terms of correctness-incorrectness—informational influence (10). It was assumed that peer agreement was psychologically equivalent to correctness. This may not have been the case. However, it does appear, at least for the present adolescent sample, that *whom* they have the experience with is more important than *what* the experience is in terms of subsequent conforming behavior. Peers are a more potent reference group than authority figures for adolescent Ss. Reinforcement affected conforming behavior as predicted by social learning theory, and females conformed more than males.

E. SUMMARY

It was hypothesized that the conformity of adolescent Ss would be influenced by the source (peer *vs.* authority) and type (agreement *vs.* disagreement) of their prior experience. It was also predicted that (a) reinforcement for agreeing with a false consensus would increase conformity, and reinforcement for disagreeing would decrease it; and (b) females would conform more than males. A social communications apparatus (13) was used to manipulate prior experiences of correctness (with an authority) and agreement (with peers), as well as to reinforce and measure subsequent conformity. One hundred thirty-eight males and 133 females, ages 12-13 served as Ss. The results indicated that the source of prior experience was significant in that prior experience with peers led to greater subsequent conformity than prior experience with an authority. The type of prior experience (agreement *vs.* disagreement) had minimal effects on subsequent conformity. Reinforcement for agreeing with a contrived consensus elicited more conformity than reinforcement for disagreeing. Females conformed more than males. The results were explained in terms of social learning and cultural expectations.

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Department of Psychology

York University

4700 Keele Street

Downsview 463, Ontario, Canada



A RE-EXAMINATION OF THE VIGILANCE HYPOTHESIS IN PERSON PERCEPTION*¹

Temple University

EMIL SOUCAR AND JOSEPH DUCETTE

A. INTRODUCTION

There is a substantial body of American research (2, 4, 5) in which it has been discovered that students differentiate more finely among individuals whom they dislike. For example, Irwin *et al.* (2), using a modified version of Kelly's Role Repertory Test (or Rep Test), found that disliked housemates were perceived more complexly than liked housemates. It is our intention in this paper to examine the dominant hypothesis used to explain such findings—the vigilance hypothesis of Miller and Bieri (3)—and to present an alternative to it.

In discussing the results of such experiments as the ones presented above, Miller and Bieri point out the possible adaptive nature of strategies that cause disliked people to be more finely differentiated. They argue that in forcing oneself to perceive disliked people more complexly, the perceiver can devise defensive techniques that enable him to anticipate possible threats to himself. This "vigilance" toward people whom one dislikes (and whom one perceives as a possible threat) will result in greater cognitive differentiation which will result in greater complexity scores on the Rep Test—a line of reasoning that has come to be termed the vigilance hypothesis.

In the critical analyzing of the vigilance hypothesis it becomes clear that there are a number of assumptions upon which it rests. One assumption is that it is disliking that causes one to increase differentiation as measured by the Rep Test. There are, of course, alternatives to this assumption, alternatives which would result in a different explanation from the one offered by the vigilance hypothesis. In this paper we will present an experiment that shows that complexity may result from the very act of asking people about things they dislike, rather than from disliking *per se*. We feel that this finding necessitates some re-evaluation of the vigilance hypothesis.

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B. METHOD

One intention in this experiment is to find a procedure that will allow us to manipulate perceptual differentiation within an experimental session. By understanding the mechanism of this manipulation, we can offer a new explanation of previous data. Our prediction is that asking subjects to defend their choices of liked and disliked persons will result in increased differentiation as compared with a control group.

This prediction is based on the intuitive notion that it is the threat of having to defend one's choice that produces differentiation. If this should be the case, an important assumption concerning causality implied by the vigilance hypothesis will be called into question and some modification of the hypothesis may be indicated.

1. Subjects

Seventy students enrolled in graduate educational psychology courses served as Ss.

2. Procedure

Each S was asked to provide the names of two liked and two disliked undergraduate instructors. Use of nicknames or course titles was permitted so long as the subject was certain he would be able to recognize the instructor the following week. These data were obtained from five separate classes within the same day.

One week later, Ss were randomly assigned to one of three treatment groups within each of the five classes. The JD group Ss were asked to justify their choices of disliked professors. They were given the following instructions:

On the rating form that you have been given, you will find the names of the four professors that you indicated you liked or disliked. These names will be followed by a series of scales which I would like you to use to rate these professors. Before you begin to fill out this rating form, however, I would like you to write a short paragraph describing why you disliked professors _____ and _____. Describe the characteristics of these professors that entered into your evaluation and that made you dislike them.

The JL group Ss were asked to justify their choices of liked professors. Their instructions were identical to those of the JD group except the word *liked* was substituted for *disliked*.

The JM group Ss were asked to justify their choices of one liked and one disliked movie they had seen. Their instructions were as follows:

As part of the experiment on the likes and dislikes of college students that you participated in last week, I would like to find out the kind of movies that you consider to be enjoyable or not enjoyable. Think back over the movies that you have seen and choose the movie you liked the most and the one you disliked the most. These do not have to be movies you have seen recently. After you have done this, I would like you to fill out the rating form that has been provided which will complete the first part of the study that was started last week.

Subjects were then given five minutes to complete each of the two paragraphs. Upon completion of both paragraphs, Ss rated each of their four instructors using the Bieri (1) version of the Construct Repertory Test.

3. *Instrument—Single Stimulus Form*

In the single stimulus form of the Rep Test the name of each of the four professors is randomly paired with each of eight bipolar adjectives. Eight of Bieri's original 10 adjectives were used in rating the professors. These were outgoing-shy, adjusted-maladjusted, calm-excitabile, interested in others-self absorbed, cheerful-ill humored, responsible-irresponsible, considerate-inconsiderate, and interesting-dull. Each professor was on a six-point, Likert-type scale (from +3 to -3). After administration, the ratings were entered in a 8×8 grid. Each of the eight columns represented a professor's name, and the eight rows, the eight bipolar constructs. The test was scored according to the method suggested by Bieri *et al.* (1, p. 190).

Cognitive differentiation or complexity is considered high when the ratings in each row are as different as possible from ratings in each of the rows below it. Whenever the rating in a particular cell is the same as the rating in a cell directly below it, a score of one is given. Ratings in each cell were compared with those in all cells below it. There were 28 possible comparisons in each column and the total possible score for the 8×8 matrix was 224. A person with a relatively low score would be considered cognitively complex because he is using constructs differently in discriminating among the people in his social environment. A relatively high score would suggest considerable repetition in the way in which S uses his construct dimensions. This S would be characterized as cognitively simple.

C. RESULTS

Table 1 presents the mean complexity scores for both liked and disliked instructors under the three treatment conditions. An analysis of variance indicated that there was a significant effect for value of instructor ($F = 107.77$; $df = 1, 69$; $p < .001$), treatment ($F = 4.48$; $df = 2, 69$; $p < .025$),

and a significant treatment by value of instructor interaction ($F = 10.03$; $df = 2, 69$; $p < .01$). The significant treatment by value of teacher interaction suggests the treatment effects for liked instructors were more dramatic than for disliked instructors.

Examination of Table 1 indicates that the justification of the *liked* choices group (JL) was more differentiating of liked instructors (low score = higher differentiation) as compared with the control group (justification of movie choices). Also evident is the fact that the justification of disliked choices group (JD) was less differentiating of liked instructors than the control group. While the former (JL) differences were predicted, the latter (JD) differences were not.

The differences between the three treatment means for liked instructors were found to be significantly different from each other at at least the .05 level (6, pp. 237-240). Differences between the three means for disliked instructors were found to be nonsignificant.

Asking *Ss* to justify their choices of liked instructors clearly had the effect of making them more differentiating (or complex) with respect to these instructors. On the other hand, requiring *Ss* to justify their choices of disliked instructors did not have a correspondingly significant effect. That disliked scores for the JD group did not deviate significantly from the control group (or the JL group, for that matter) may be explained as an artifact of the scales used. It is mathematically possible for an *S* to have a minimum like or dislike score of four. In actuality, however, only four of our 72 *Ss* obtained like or dislike scores of less than nine. It seems safe to conclude that one possible reason for not obtaining differences among the dislike scores for the three treatment conditions is some sort of cellar or basal effect.

The significant difference for liked instructors between the JD group and the control group is not so easily explained. That asking *Ss* to justify their disliked choices would possibly have the effect of making them more simple (less differentiating) regarding liked choices was totally unexpected. At this time we have no explanation for this phenomenon.

TABLE 1
MEAN DIFFERENTIATION SCORES FOR BOTH LIKED AND DISLIKED INSTRUCTORS
UNDER THE THREE EXPERIMENTAL CONDITIONS^a

Instructions to <i>S</i>	Value of instructor	
	Like	Dislike
1. Defend like choices	23.042	15.958
2. Defend dislike choices	36.750	14.750
3. Defend movie choices	30.375	16.958

^a Low score = high differentiation.

D. DISCUSSION

Our data indicate that differentiation can be manipulated within the experimental session. The vigilance hypothesis would have to predict that this manipulation should have no effect on the cognitive complexity scores. Why should writing stories about liked objects cause these objects to be more threatening so that one differentiates them more? The fact that this manipulation did have an effect indicates that a new explanation of previous data is necessary. We would like to propose an alternative that we will call the "justification hypothesis."

The justification hypothesis is based on the idea that the complexity discovered in experiments, such as the one presented in this paper, may not be the result of affect *per se* but may instead be the result of committing oneself to a statement concerning affect. In committing oneself to saying that a stimulus object is disliked, one is perhaps forced to become more differentiating and complex in one's perception of this object. The reason for this is that in most situations the statement "I like this" is likely to require a defense than is the statement "I do not like this." As a consequence, people become more differentiating *vis à vis* disliked objects because they have to be, because they are more likely to be forced to mention specific details or specific properties of the object which have caused them to form their judgment. Such disliked objects are not necessarily threatening and there is no need to defend oneself against them or be vigilant concerning them. It may not be vigilance, then, but the threat of postdecisional justification that causes people to differentiate more among things they say they dislike.

This explanation of our data seems the most reasonable one in light of the present experiment. We did not predict, nor can we completely explain, why justifying dislike choices produces decreased differentiation of liked objects, indicating that some modification of the justification hypothesis may be necessary. Nevertheless, the strength of the effect of this manipulation is clear and seems to necessitate some rethinking of the issues in this area.

E. SUMMARY

The present experiment was designed to reappraise a series of studies that have shown that people differentiate more among persons whom they dislike than they like. The issue raised in this paper is that the results reported in previous research may not necessarily support the hypotheses formulated to account for these results. Such hypotheses (in particular the Miller and Bieri vigilance hypothesis) have traditionally implied a certain type and

direction of causality in the data. The present study reveals that perceived complexity can be manipulated by having subjects justify their choice of liked and disliked objects. This finding would seem to require a reinterpretation of previous data, and an alternative hypothesis is discussed.

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Department of Educational Psychology
Temple University
Philadelphia, Pennsylvania 19122

INTERACTION OF SEX AND TRAINING METHOD IN HUMAN MULTIPLE-CHOICE LEARNING*¹

University of Missouri, Columbia

MELVIN H. MARX, DAVID W. WITTER, AND JOHN H. MUELLER

A. INTRODUCTION

This experiment was part of a series (*cf.* 4, 7) designed to compare the role of performance (trial and error learning with knowledge of results) with that of observation (receiving information only) in human learning. The research was initiated by the finding of superior acquisition by the observation group in a sequential multiple-choice task [(3) and see Rosenbaum and Arenson (5) for more recent confirmations].

In the present experiment, utilizing American college-student subjects, two variables were manipulated: observation *vs.* performance, and social *vs.* isolate training. The social variable was chosen to determine the feasibility of using isolated pairs in the observational learning situation. The isolate condition served as a control for the factor of social interaction, eliminating the "modeling" aspect (*cf.* 2) affecting the social observer, as well as the possibility that the performer may be affected by the social variable. The present situation differed, however, from the customary "modeling" one in that the performer was not a confederate; his responses were determined by the experimental situation rather than by the experimental design.

B. METHOD

All Ss were given a familiarization session the week before the training-test session. They were shown the apparatus and general procedure, with sample stimuli, but were not told into which group they would be placed. The apparatus consisted of four computer-controlled operant booths, each of

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which contained a display panel with three one-inch Lehigh Valley keys on which various patterns of tilted lines (at 22.5° variations) were shown by means of a standard visual display mechanism (IEE cells). The two inactive booths had no response buttons, but each was yoked to one of the two active booths so that exactly the same display of tilted-line patterns appeared simultaneously in both booths, and a brief blinking of the pattern selected by the performer, who pushed the button, indicated such selection to the isolate observer.

The 124 *Ss* were randomly placed into one of the four groups; the factor of sex then yielded a simple $2 \times 2 \times 2$ factorial design (perform/observe by social/isolate by male/female). To get equal *ns* per cell, 12, a total of 28 *Ss* were randomly discarded. Social performers and observers were placed together in the same active booth; isolate performers and observers worked by themselves in separate but yoked booths, as described above. The factor of sex was controlled by the use of like-sex pairs in all cases.

Sixteen sets of three line-tilt patterns (triads) with one to seven lines per pattern were used as stimuli; all 16 triads were presented in each trial. A paper-and-pencil retention test followed a block of three trials; there were nine trials in the experimental session, and three tests. One pattern from each triad was randomly selected as correct. The task required the correct pattern to be discovered by the performer and remembered by both the performer and the observer. A noncorrection procedure was used, with immediate knowledge of results provided by the flashing on of either a red (for incorrect responses) or a green (for correct responses) light. A single response was permitted for each stimulus triad, and in the event of an error, which of the remaining two patterns was correct was not indicated. Stimuli were exposed at a 10-second, rate for both trials and tests, with intertriad intervals of three seconds on trials and four seconds on tests.

C. RESULTS AND DISCUSSION

The major data of the experiment are plotted in Figure 1. The main effects of observation *vs.* performance and social *vs.* isolate condition did not produce statistically reliable differences in terms of number of correct test responses. However, there was a reliable main effect of sex, with males surpassing females: means of 7.27 and 6.67 correct responses out of 16, respectively; $F(1, 88) = 4.09, p < .05$. Moreover, and most interesting, there was a reliable triple interaction between sex, social condition, and tests: $F(2, 176) = 4.81, p < .01$, with social females showing markedly less improvement over test under either performance or observation conditions of practice.

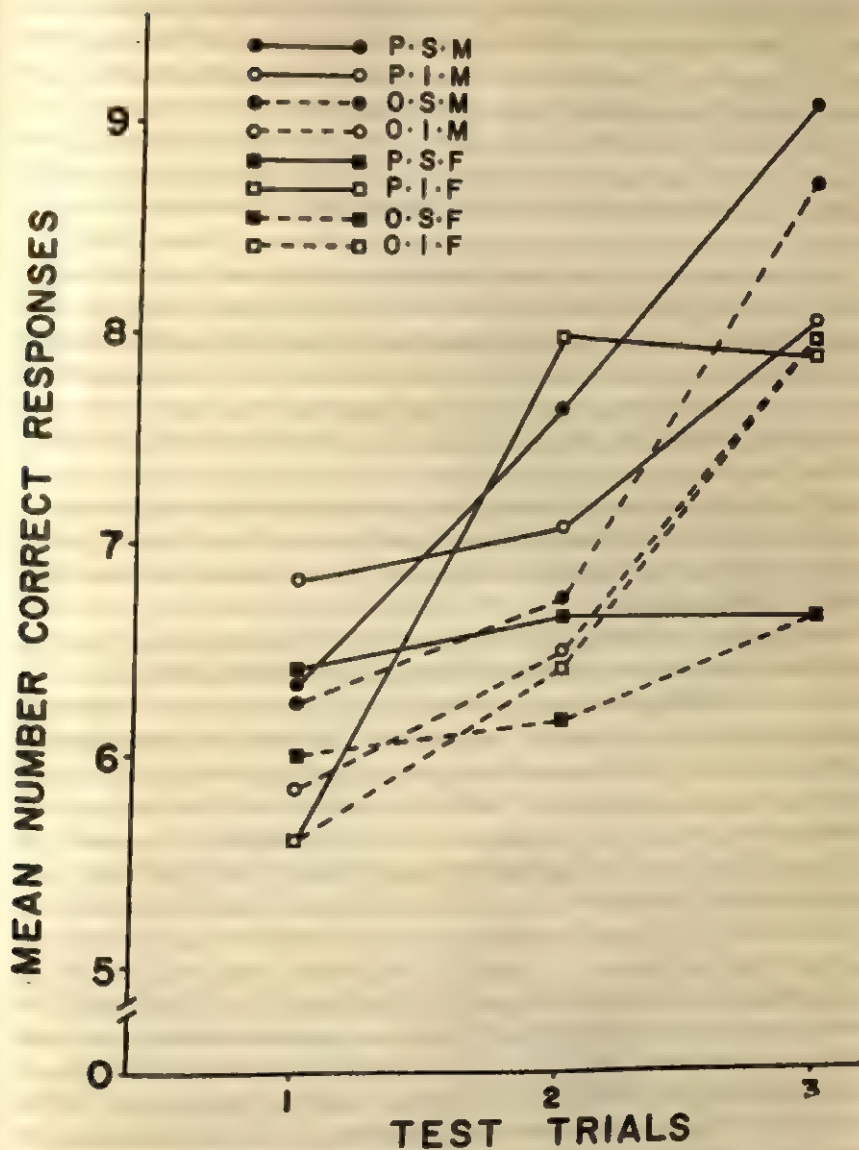


FIGURE 1

MEAN NUMBER CORRECT RESPONSES OVER TRIALS FOR EIGHT EXPERIMENTAL
 [VARIABLES: OBSERVE/PERFORM (O, P); SOCIAL/ISOLATE (S, I);
 AND SEX (M, F)]

The general superiority of males in this particular task may in part reflect their greater familiarity with and/or lesser antipathy toward the geometric type of stimulus. In other recent research in this laboratory, however, we have observed male *performer* superiority in repeating *correct* responses, with the use of quite different stimulus materials (human facial features). These results suggest some general sex difference, especially under the performance condition, and indicate that the sex variable needs to be considered in future research on these problems, especially in view of the related present findings.

The interesting triple interaction, in particular, offers food for a diversity of theoretical thought. As one possibility, it may be that the anxiety level of women working socially is higher than that of men working socially, and that their learning of such relatively unfamiliar materials is thereby inhibited. This kind of interaction, however, did not occur in other recent studies. In one of these, essentially the same procedure was used (but only with isolate conditions), and no effect of sex was found (7). In the other study, multiple social pairings were done simultaneously, within a classroom rather than a booth in which only the two *Ss* were present, and again no effect of sex was found, suggesting the specificity of the effect to the present more explicitly interpersonal condition.

An alternative interpretation of this interaction involves speed of learning, and is supported by data reported by Cottrell (1) in his comprehensive review of audience effects upon human performance. He found a triple interaction among the variables of audience, nature of list, and speed of learning; slow- and medium-speed learners made more errors in the competitive list (pre-experimental associations interfering with new responses) and fewer errors in the noncompetitive list with an audience (passively observing) present. No differences were found for the faster learners. However, since only males were used as subjects, any effect of sex cannot be determined. These results were seen as consistent with Zajonc's hypothesis (8, 9) that dominant responses, whether correct or not, are generally enhanced by the anxiety-arousal produced by the social presence of others. For the present task and materials, the female students were slower learners, so that their failure to show improvement over trials in the social condition could be explained by the further assumption of greater anxiety arousal (6). Since this failure was found for observers, as well as performers, it appears that observational learning, as well as the more overtly active performance, was affected. According to this view, the effect of sex *per se* would be minimized. Although there are, of course, many other theoretical interpretations (e.g., social expectations), further speculation at this point

would not be profitable. Verification and generalization of this provocative finding should precede the analytic experimental attack that is needed for effective theoretical interpretations.

Meanwhile, some methodological suggestions should be noted. It would seem that caution is indicated when female Ss in American college culture are asked to work together in learning situations of this sort. In particular, it appears that simple equal distribution of sexes in treatment groups may be an ineffective control, inasmuch as more than a main effect seems to be involved. Thus, although the theoretical implications are uncertain, the unexpected interaction here reported should be of interest to social psychologists and others concerned with the investigation of various sorts of interpersonal relationships.

D. SUMMARY

Male and female college students either performed (engaged in trial-and-error behavior, with knowledge of results following each response) or observed another student's performance in a discrimination learning situation, under either social (performer and observer together in one booth) or isolate (performer and observer in separate, yoked booths) conditions. Female college students showed reliably less learning over trials under the social condition than under the isolate condition, also less than male students working under either social or isolate conditions. These results were independent of whether the students were performing or observing.

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Department of Psychology
University of Missouri—Columbia
209 McAlester Hall
Columbia, Missouri 65201

COALITION FORMATION UNDER CONDITIONS OF UNCERTAINTY* ^{1 2}

*Graduate School of Business and Public Administration,
Baruch College of the City University of New York*

MAHMOUD A. WAHBA

A. INTRODUCTION

Much of the recent research in coalition behavior was stimulated by Caplow's Minimum Resource Theory of Coalition Formation in the Triad (2, 3). He proposed that coalitions in the triad are formed according to the initial distribution of power among the triad members. In his analysis of eight types of triads, Caplow predicted that coalitions will always favor the weak triad members over the strong. This prediction was supported by a number of experiments (7, 8, 14, 15). These experiments showed that the two weak members formed a coalition that dominated the strong member. However, other experimental findings (4, 6, 16) indicated that the strong member in the triad was always included in coalitions and preferred by others as a coalition partner. Furthermore, Kelley and Arrow (8) reported that after the first three or four trials, there was little more than a chance exclusion of the strong member from coalitions.

It is proposed in this paper that the conflicting experimental findings can be resolved by examining the conditions under which coalitions are formed. Coalitions are formed either under conditions of certainty or uncertainty with regard to their success. In coalition formation under condition of certainty, the probability of coalition success is known *a priori* to be either zero or one, and any coalition could be either a sure loser or a sure winner. In coalition formation under condition of uncertainty, the probability of coalition success is between zero and one, and any coalition could either succeed or fail. Once the distinction between the conditions of certainty and uncertainty of success is recognized, a coalition expected utility (CEU) model can be em-

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ployed to predict coalitions that are most likely to be formed, and coalitions that are least likely to be formed. According to the CEU model, coalitions are formed to maximize their expected utility; and, consequently, coalitions with the highest expected utility are the most likely to be formed, while coalitions with the lowest expected utility are the last likely to be formed. For example, in a triad consisting of members A , B , C , there are three possible coalitions (AB , AC , or BC). Associated with each possible coalition is specific utility for a given consequence (success or failure) where $U_{S|X}$ is the utility of coalition X given success; and $U_{F|X}$ is the utility of coalition X given failure.

The expected utility for a given coalition is obtained by multiplying the utility of each possible consequence by its probability, and summing these products across all possible consequences. The expected utility for coalition X is given symbolically as follows:

$$EU_X = (P_{S|X}) (U_{S|X}) - (P_{F|X}) (U_{F|X}),$$

where $P_{S|X}$ is the probability of success of coalition X ,

$P_{F|X} = 1 - P_{S|X}$ is the probability of failure of coalition X ,

$U_{S|X}$ is the utility to coalition X given success,

$U_{F|X}$ is the utility to coalition X given failure.

In order to apply the CEU model to one of Caplow's triads where power is distributed among the three members as $A > B > C$, $A < (B + C)$, let the probability of coalition success be related positively to coalition strength (8) and let coalition utility equal 1 in case of success and zero in case of failure (9). It follows that the expected utility for coalitions AB , AC , and BC is

$$EU_{AB} = (P_{S|AB}) (1) - (1 - P_{S|AB}) (0) = P_{S|AB},$$

$$EU_{AC} = (P_{S|AC}) (1) - (1 - P_{S|AC}) (0) = P_{S|AC},$$

$$EU_{BC} = (P_{S|BC}) (1) - (1 - P_{S|BC}) (0) = P_{S|BC},$$

since $EU_{BC} > EU_{AC} > EU_{AB}$, it follows that coalition AB is the most likely to be formed and coalition BC is the least likely to be formed.

B. THE EXPERIMENTAL DESIGN

Caplow's predictions of coalitions that are most likely to be formed and the CEU model predictions are almost opposite to each other, especially in case of coalition formations under condition of uncertain success. Two experiments, one with all males and the other with all females, were designed to test the two predictions against each other. Four of Caplow's triads were used in both experiments. Table 1 shows the initial distribution of resources among

TABLE 1
FREQUENCY OF COALITION FORMATIONS IN THE MALES

Triads	Coalitions			Predictions			No coali- tions
	AB	AC	BC	Caplow	CEU	% Correct (CEU)	
I. $A > B, B = C,$ $A < (B + C)$	92	73	25	BC or AC	AB or AC	86%	50
II. $A < B, B = C$	34	45	105	AC or BC	BC	56%	56
III. $A > B > C,$ $A < (B + C)$	146	53	11	AC or BC	AB	69%	30
IV. $A > B > C,$ $A = (B + C)$	121	54	32	AB or AC	AB	58%	33

* $p < .001, df = 2.$

the members in the four triads, and the predicted coalitions by both Caplow and the *CEU* model.

C. EXPERIMENT I

1. Subjects

Forty-eight male undergraduate students at the University of Nevada served as subjects in 16 triads. A minimum earning of \$1.60 per hour was guaranteed for each student with possible additional earnings of \$2.00 per hour. The subjects were recruited from the campus at large by advertisement to minimize friendships

2. Apparatus

A round table and four chairs, three for the triad members, and a fourth for an administrator; a standard deck of 52 playing cards; a stopwatch; and a game matrix showing the initial distribution of power in the triad. Each member was given the following: a pencil; a budget sheet; 60 bargaining sheet (one for each trial); and six identification cards marked A, B, or C (two for each letter).

3. Procedure

The procedures were similar to these recommended by Swingle (12). Four groups were assigned randomly to one of the four triads. There were 60 trials and the subjects were rotated randomly in each trial among positions A or B or C. The selection of partner was dependent upon the distribution of power among the members as shown in the matrix. It was impossible to discover who was in which position for a given trial before a coalition was formed, and personal preferences or preferences due to ease of bargaining were eliminated as criteria for the choice of a partner. The procedure emphasized the uncertainty of coalition success by making it dependent partly upon winning a card game. Also emphasized were the assigned resources in each trial because subjects had to subtract their initial resources from their gains to determine the additional earnings. The following explanation sheet was distributed by each administrator to his triad:

We are interested in how people form coalitions or partnerships in group decision-making situations. Three of you are going to participate in a special type of game in which you may form a partnership with one but not both of the other two students. Three of you will be assigned randomly to position A or B or C on a game matrix; the matrix be posted on the table. Your position will change randomly in each trial.

The bargaining sheets will indicate your assigned position for any given trial. You have to make sure that no one discovers your position in any trial, otherwise you may lose. Each position is assigned a specific weight (e.g., 1, 2, 3, or 4 points). I will say, "Get ready to choose a partner," at which time you should decide which of the other two students you want as your coalition partner. Turn over, face down, the two identification cards; the first card should indicate your own position in this trial. The two students who choose each other are considered a coalition for that trial and will pool their weights together against the third member. If there are no mutual choices, this trial will be terminated, and the money goes to me.

To start a new trial, we will go through the choice process again until a coalition is formed. However, the coalition is not a sure winner by the mere act of its formation. To win, the coalition has to go over another hurdle. After the team is formed, a standard deck of cards will be divided into two packs. Each pack will contain exactly 26 cards. The coalition will choose one pack, without looking at the cards' values, and the third member will take the other pack. The two coalition partners will add the values of their weight to be used against the third member. For example, if one member who was assigned a weight of 3 formed a coalition with a member who was assigned a weight of 2, then the coalition has a total weight of 5; while the third member will carry his individual weight.

The game is played to win a prize. In each trial, the total amount of the prize for each game is determined by multiplying the total weight of the three members by four cents. This is, one unit of weight is equal to four cents (i.e., in a game where the respective weights of the members A, B, and C are 1-2-2, the total amount of the prize is $4 \times 5 = 20\text{¢}$ for each trial). The game will be played in tricks. That is, the coalition partners will turn over one card from their pack and multiply the value of the card by the total amount of their weights. The third member will do the same using his pack; and this procedure will be repeated 26 times. The values of the cards are as follows: aces, 15 points; all picture cards, 10 points; all other cards at face values. The prize will be won by the coalition or the third member depending upon who won the largest number of tricks. If the coalition wins, the partners will decide upon the division of the prize by negotiation, while the third member will turn his back to the table. To save time, we have made up bargaining sheets (the same sheets that indicate your position each trial) which contain the necessary statements for you to communicate silently right at the table by simply marking on the bargain sheet the offer you wish to make. Give your offer to the administrator, and the administrator will show it to your partner. You will have 60 seconds to agree upon a prize division making sure that the third member does not know your share. If you fail to agree within 60 seconds, the third member will receive his initial resources (his weight multiplied by four cents) and the remaining amount of money will go back to me. You are provided with a budget sheet to keep a record

of your gains and losses. You should record your assigned resources in Column 1 at the beginning of each trial. By the end of the trial, record any gains you made in Column 2. The difference between Columns 1 and 2 will determine your additional earnings.

We will have three trials for practice before we proceed. Be sure that you understand the procedure totally; otherwise ask questions. Absolutely do not talk or communicate by any means during all stages of the games; otherwise you will lose your total earnings.

4. Results

There was a total of 240 observations in each of the four triads (4 groups \times 60 trials). Table 1 shows the observed frequencies and the percentage of correctly predicted coalitions by the *CEU* model. The coalitions predicted by the *CEU* model were formed with the highest frequencies, and Caplow's predicted coalitions were formed with lower frequencies.

A chi-square analysis was performed to test for a significant difference between the observed distribution and a theoretical distribution of equal frequencies. The test showed significant differences both when the cell of "no coalition" was included and when this cell was excluded ($p < .001$). Also, as predicted by the *CEU* model, coalitions with the lowest expected utility were the least frequent coalitions. Inspections of the data on a trial-by-trial basis showed an increasing support of the *CEU* model predictions over time. In triad type I, $A > B$, $B = C$, $A < (B + C)$, the percentage of correctly predicted coalitions was the highest, and the frequency of "no coalition" was relatively high. These trends in triad type I may be due to the existence of two coalitions of equally high expected utility. Coalitions AB and AC were formed in triad type I, as predicted, with the highest frequencies. However, coalition AB was formed with higher frequency than coalition AC , and the difference approaches significance at $p < .10$. There seems to be no reasonable explanation of this difference except for the order of the letters A, B, C in the alphabet. It should be noted that except for triad type I, the higher the coalition payoff, the higher the percentage of correctly predicted coalitions and the lower the frequency of "no coalitions."

According to Chertkoff (4) the partner preference of the respective member is a better measure than the frequency of coalitions formed for testing coalition formation theories. The superiority of this test is due to its differentiation between a deviation of just one triad member from the predicted behavior and a group deviation. Also, this test considers the preference of the excluded member. Table 2 shows the partner preferences in the four triads. The

TABLE 2
FREQUENCY OF PARTNER PREFERENCES FOR MALES

Members	Triad type															
	$A > B, B = C, A < (B + C)$			$A < B, B = C$			$A > B > C, A < (B + C)$			$A > B > C, A = (B + C)$						
	A	B	C	X ²	A	B	C	X ²	A	B	C	X ²	A	B	C	X ²
A	131	109	2.4		160	80	26.6*		169	71	40.0*		163	77	30.8*	
B	182		58	64.0*	75	165	33.7*		205	35	120.0*		178	62	56.0*	
C	184	54		68.2*	73	167	40.1*		192	48	86.4*		177	63	54.9*	
Total	366	193	161	101.3**	148	327	245	66.9**	397	217	106	101.0**	355	226	139	140.0**

* $p < .001, df = 1.$

** $p < .001, df = 2.$

column totals in Table 2 show the preferences for the given member by the other two members, while the rows show the preferences for the other two members by a given member.

A chi-square test indicates a significant difference between the preferences for a given member by the other ($df = 2, p < .001$). It is obvious from Table 2 that a triad member was preferred according to his relative strength: the strongest member was the most preferred partner and *vice versa*. A chi-square test indicates a significant difference between the preference for the others by a given member ($df = 1, p < .001$). Again the preference for the others by a given member was dependent upon their strength: the strongest members were the most preferred partners; and *vice versa*. The preference for members of equal strength was dependent upon the alphabetical order.

D. EXPERIMENT II

The second experiment was an exact replication of the first except for the subjects. The subjects in the second experiment were 48 females from the University of Nevada recruited in the same manner as the males. The observed frequencies of the coalitions formed in the four triads are shown in Table 3. It should be noted that the results of the females are similar to those of the males.

The coalitions predicted by the *CEU* model were formed with the highest frequencies, while the coalitions predicted by Caplow formed with lower frequencies. Also, coalitions with the lowest expected utility were the least frequent as predicted by the *CEU* model. A chi-square test showed a significant difference between the observed distribution and a theoretical distribution of equal frequencies ($p < .001$). The partner preference for respective triad members is shown in Table 4. A chi-square test shows a significant difference between the preferences for a given member by the others ($df = 2, p < .001$). Also, the test shows a significant difference between the preferences for the others by a given member; the strongest member was preferred the most, and the weakest member was preferred the least.

Although the predicted coalitions were the most frequent coalitions in both males and females, the frequencies of the females lend stronger support for the *CEU* model than those of the males. The percentages of successfully predicted coalitions were higher in the females than the males, and the frequencies of "no coalition" were lower in the females than the males. Also, the preference for the strong member and the rejection of the weak member was stronger in the females than in the males.

TABLE 3
FREQUENCY OF COALITION FORMATIONS IN THE FEMALES

Triads	Coalitions			Predictions			No coalitions
	AB	AC	BC	X ²	Caplow	GEU	
I. $A > B, B = C,$ $A < (B + C)$	100	87	18	112.6*	BC	AB or AC	35
II. $A < B, B = C$	27	25	155	160.8*	AB or AC	BC	33
III. $A > B > C,$ $A < (B + C)$	157	43	14	161.0*	BC or AC	AB	26
IV. $A > B > C,$ $A = (B + C)$	164	39	10	188.6*	AB or AC	AB	27

* $p < .001, df = 2.$ TABLE 4
FREQUENCY OF PARTNER PREFERENCES FOR FEMALES

Members	Triad type					
	$A < B, B = C$			$A > B > C, A < (B + C)$		
	A	B	C	A	B	C
A	130	110	1.6	125	115	4
B	190	50	81.6*	47	193	88.8*
C	194	46	79.6*	48	192	88.0*
Total	384	176	160	95	317	308
			130.0**			139.0**
				401	222	97
						194.6**
				184	56	67.4*
				205	35	120.0*
				183	57	66.3*
				388	241	91
						183.7**

* $p < .001, df = 1.$ ** $p < .001, df = 2.$

E. DISCUSSION

The results, generally, supported the *CEU* model against Caplow's theory. The highest observed frequencies of coalition formations were those predicted by the *CEU* model, while Caplow's predicted coalition formed with lower frequencies. Also, the *CEU* model predicted successfully the least frequent coalitions. The strong triad member was always included in coalitions, while the weak member was almost always excluded from coalitions. Furthermore, partner preferences were dependent upon relative strength. The strong member was the most preferred partner, and the weak member was the least preferred partner. There was a difference between coalition formation among males and coalition formation among females. This difference could be explained by the differential risk tendencies in the males and in the females. The males, on the other hand, showed a tendency toward riskless choices, when they traded higher probabilities of success for higher potential gains. The females, on the other hand, showed a tendency toward riskless choices, when they traded higher gains for higher probabilities of success.

The results present a direct test to three additional theories of coalition formation: Chertkoff's (5) revision of Caplow's theory; Gamson's (7) Minimum Power Theory; and Vinacke *et al.* (1, 13, 14, 15) Anti-Competitive Theory. These three theories propose conflicting predictions, especially with regard to triad type III, where the resources are distributed as $A > B > C$, $A < (B + C)$. Chertkoff (5) proposed a revision of Caplow's coalition theory by considering the proportionality of member's coalition partner choices. The revised theory yields identical predictions to Caplow's original theory for all triads except for triad type III. For this triad, Caplow predicted that coalitions *AC* and *BC* are equally likely, while Chertkoff predicted that coalition *BC* should occur twice as frequently as coalition *AC*. Chertkoff's predictions were not supported; indeed the results indicate that the opposite trend may be true. Gamson (7) proposed a Minimum Power Theory where the cheapest winning coalition (the coalition with total resources closest to the decision point in the triad) will be formed. Gamson's predictions are also the same as Caplow's predictions except for triad type III, where Gamson predicted that coalition *BC* will be formal. The results do not support Gamson's prediction because coalition *AB* was formed with the highest frequency. The Anti-Competitive Theory was developed in relation to studies of coalition formation among females (1, 13). It proposed that coalitions are formed along the lines of the least resistance in order to minimize interpersonal competition. Phillips and Nitz (11) interpreted the Anti-Competitive Theory as having two predictions, the first applies in

the presence of two members of equal power in the triad, and the second applies in their absence. If the triad has two members of equal power, coalitions will be formed between them; otherwise it will be formed among the strongest and weakest members to maximize the visibility of the difference between partners. The test of the Anti-Competitive Theory is rather complicated, since the theory does not make one prediction. If the test consists of whether coalitions are formed between a visibly strong and a visibly weak member, the predictions can only be tested in triad $A > B > C$, $A < (B + C)$ and triad $A > B > C$, $A = (B + C)$. The results again show that the predictions of the Anti-Competitive Theory are not supported, especially in comparison to the predictions of the *CEU* model. The Anti-Competitive Theory, however, is more relevant in the case of payoff division among females, where the payoff was divided equally regardless of the initial resources to minimize conflict. The superiority of the *CEU* model over other theories lies not only in its high predictive validity, but also in its potentiality for improvement. It should be noted, for example, that both probability and utility were estimated objectively rather than subjectively. A subjective estimation of these two parameters would enhance the predictability of the model. (Although the actual probabilities of success were not exactly proportional to the coalition weights in the experiment because of the card game, it can be assumed that these weights reflected a subjective rather than an objective nature of the estimate.) The results are in agreement with studies by Willie (16), Chertkoff (4), and Cole (7). The agreement can only be attributed to the fact that they are the only studies of coalition formations under deterministic conditions. The results are also consistent with the implications of similar study by Ofshe and Ofshe (10) in which an individual decision model was employed to predict the choice of partners in coalition games. Although the present study and Ofshe and Ofshe's study are different with regard to the unit of analysis and variables investigated, both studies show that it is possible to use decision-making theory, group or individual, to explain some aspects of coalition behavior. Additional studies in this direction are obviously needed; also, the cross-validity of the *CEU* model in other cultures is yet to be determined.

F. SUMMARY

In coalition formation under conditions of uncertainty, the probability of coalition success is $0 < p < 1$. A Coalition Expected Utility (*CEU*) model is proposed where coalitions with the highest expected utility are predicted to form. Two experiments were designed to test the *CEU* model given four of Caplow's triads in the males and in the females. The observed frequencies for

both males and females supported the *CEU* model against Caplow's Minimum Resource Theory ($X^2, p < .001$). The partner preferences indicated that the strongest member was the most preferred partner and the weakest member was the least preferred partner ($X^2, p < .001$). Males showed a stronger tendency toward risky decisions than females. The *CEU* model showed a higher predictive validity than three additional deterministic theories of coalition formation.

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Baruch Graduate Center
257 Park Avenue-South
New York, New York 10010

GROUP RISK TAKING IN MILITARY DECISIONS*¹

Brigham Young University

KENNETH L. HIGBEE

A. INTRODUCTION

Many studies in the last 10 years have indicated that groups take greater risks than individuals [see reviews by Clark (2), Higbee (3), Kogan and Wallach (8)]. This phenomenon has been termed the "risky shift." Most risky-shift research has been quite consistent in demonstrating the effect. Higbee (3) noted that of 36 relevant experimental studies published through 1969, the results of 29 studies indicated that groups were more risky than individuals.

Military decisions are often made by groups. This is especially true at the upper levels, where decisions regarding international policy and military issues are usually made by committees, or at least by one man who has discussed the decisions with a committee. Consequently, several studies have specifically noted the obvious implications of the risky-shift effect in military decisions (e.g., 1, 7, 14).

If groups actually are more risky than individuals, this may indeed have some important implications for military decision making in the real world. However, one should be cautious in extending the results of risky-shift lab studies to more complex decision-making environments. Higbee (3) has suggested that decision making in the real world of international conflict may differ from the psychological laboratory in several important ways: (a) potential gain and loss in real-world decision making is likely greater, (b) potential gain and loss in real-world decision making is real, whereas many laboratory studies involve only hypothetical gains and losses, (c) personal involvement of the decision makers is probably greater in the real world (since careers and lives may be at stake), and (d) the uncertainty of gain or loss in the real world (i.e., risk) is based on interacting multiple determinants, rather than on a single determinant, such as the roll of a die or the choosing of a known-probability outcome.

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Because of the differences between actual military decision contexts and most risky-shift laboratory settings, it may be of value to employ a simulation technique with multiple components in the study of risky decision making. Although it is not possible to introduce gain and loss of real-world proportions into a simulation, it has been frequently demonstrated that the participants in a simulation experience considerable involvement. In addition, they are in a complex environment in which they actually make decisions and in which the outcomes of their decisions are determined by many interacting factors. Therefore, research on group risk taking in a simulated setting corresponding to an international conflict may suggest whether previously reported findings on risky shift in the laboratory might hold in more realistic complex environments.

Higbee (3) has noted that of the 29 studies which have found a risky shift, 21 have involved questions from the Choice-Dilemma Questionnaire (CDQ) as the measure of risk. The CDQ is a paper-and-pencil measure of hypothetical risk taking. To explore the possibility that the risky-shift effect may be, in part, an artifact of using the CDQ, Higbee (3) classified the risky-shift studies in a 2×2 table on two dimensions: (a) used only items from the CDQ, or used some other task, and (b) found a risky shift, or did not find a risky shift. A total of 36 studies were categorized. Of the 21 studies that had used the CDQ, every one found a risky shift. However, among those 15 studies which had used another task, eight found a risky shift. A Fisher exact test indicated that the probability of observing these frequencies if the use of the CDQ and the finding of a risky shift are not related is very small ($p = .000077$).

Thus, in spite of the fact that the reliability and validity of the CDQ as a measure of risk have supposedly been demonstrated (*cf.* 6, 9), a further assessment of its relationship to risk taking in a complex decision-making environment involving actual decisions may be beneficial—especially before one goes too far in extrapolating effects found on the CDQ to real-world military policy. The purpose of this study is to examine the relationship between CDQ scores and actual military riskiness by groups participating in a simulated international conflict.

B. METHOD

1. *Choice-Dilemma Questionnaire*

The Choice-Dilemma Questionnaire (CDQ) contains descriptions of 12 situations in which the central person must choose between two courses of

action, one of which is more risky than the other, but also more rewarding if successful. For each situation, the subject indicates the lowest probability of success he would accept before advising that the more rewarding alternative be chosen. The probabilities from which he chooses range from 1 chance in 10 to 10 chances in 10. The CDQ score is obtained by summing the probability levels chosen on the 12 items. Thus, scores can range from 12 to 120, with larger scores reflecting greater conservatism. The complete CDQ may be found in Kogan and Wallach (6, Appendix E) or Higbee (3).

2. Subjects

The CDQ was administered to male undergraduate students at a large midwestern university in the United States. On the basis of their CDQ scores, 120 subjects were selected to participate in a complex decision-making task (see below). They were divided into 60 two-man groups, 30 groups being composed of high risk takers (mean CDQ score 57.12) and 30 groups being composed of low risk takers (mean CDQ score 78.67).

3. Decision-Making Task

The Tactical and Negotiations Game (TNG) is a complex decision-making task developed by Streufert, Castore, and Kliger (12) and Streufert, Kliger, Castore, and Driver (13). It is an experimentally-controlled simulation where the environment and the progression of the game are under the control of the experimenter. Subjects are told that they are playing the game against another team of subjects, and that the experimenter is acting as judge. In reality, the strategy of the other "team" is preprogrammed. All information messages received by the subjects during the game are constant across all teams.

The TNG has been shown to produce perceptions that are equivalent to the induction of independent variables (*cf.* 4). Validation for this kind of procedure and data indicating face validity of the programmed manipulation of information received by subjects are presented in detail in Streufert (11), and Streufert, Castore, and Kliger (12).

The two men in each team in the TNG serve as co-commanders for one of two mythical countries involved in a simulated small-scale international conflict. In attempting to resolve the conflict, teams make decisions concerning military, economic, intelligence, and diplomatic matters. The present study is concerned with the military decisions.

Before beginning the TNG, subjects spent two hours studying their player's manuals. This presented them with the information necessary to play

the game, and served to equalize somewhat their pre-experimental experience. The teams then played the TNG for five consecutive half-hour periods (each period was six months according to converted clocks on their walls). To avoid an end effect, subjects were not told how many periods they would be playing. During each of the five playing periods subjects received information from the experimenters, concerning enemy activity and the results of their own decisions, on Report Forms. Subjects also made written decisions on Decision Forms.

4. *Data Collection*

Each Decision Form included a seven-point scale on which the subjects rated the riskiness of the decision on a dimension ranging from "very low risk," 1, to "very high risk," 7. This provided a measure of their perceived riskiness. After each of the five playing periods there was a brief intermission, during which the subjects completed an Interim Report Form. The Interim Report Form contained several scales, one of which is of interest for the present study. On this scale subjects were asked to respond, by checking a seven-point scale ranging from "very low risk," 1, to "very high risk," 7, to the question, "How risky were your team's decisions this past half year?" This provided a second measure of their perceived riskiness for each playing period.

To obtain an index of the actual riskiness of each team, military decisions were classified as risky or not risky, on the basis of the decision text and on the rationale for the decision indicated on the Decision Form [economic risk has been similarly studied (5)]. Military decisions were judged as risky if they were aggressive rather than defensive in nature, and if they placed troops or equipment into positions where there was a possibility of their being captured or destroyed. [A more detailed description of the criteria used in judging may be found in Higbee (3).] Two judges independently judged the riskiness of 10 teams selected at random, to provide a reliability check on the adequacy of the criteria used. After all decisions were judged, four different kinds of riskiness scores were computed for each team:

1. The number of risky military decisions made during each of the five periods of play, obtained by summing the number of risky decisions that the team made each period.

2. The number of brigades invested in risky decisions for each of the five periods of play, obtained by summing the number of brigades that the team involved in risky decisions each period.

3. The proportion of risky decisions to total decisions, obtained by

dividing the number of risky decisions made during the game by the total number of decisions made during the game.

4. The mean number of brigades invested in each risky decision, obtained by dividing the number of brigades invested in risky decisions during the game by the number of risky decisions made during the game.

In addition to the above four objective measures of actual risk, which are independent of the subjects' perceptions of their riskiness, two subjective measures were of interest:

1. The perceived risk level for each period as indicated on the Interim Report Forms.

2. The perceived risk level of each decision as indicated on the individual Decision Forms.

C. RESULTS AND DISCUSSION

1. *Adequacy of Judged Actual Risk*

The correlation between the ratings of decisions as risky and nonrisky by the two judges was $r = .86$. The two judges agreed on 94.7% (198 out of 209) of the decisions. Further evidence for the adequacy of the criteria used in judging the decisions was obtained by comparing judged riskiness of the decisions with the subjects' perceived riskiness of their decisions. If the ratings were valid, subjects should have tended to perceive more risk in the decisions that were judged as risky than they perceived in the decisions that were judged as nonrisky. The mean perceived risk level of those decisions judged as risky was 4.65, and of those decisions judged as nonrisky was 3.89. An analysis of variance indicated that the difference was significant ($F = 50.85$, $df = 1/59$, $p < .001$).

2. *CDQ Scores and Actual Risk*

Two-way analyses of variance—CDQ (high, low) \times Periods (1-5)—were computed on the number of risky military decisions and on the number of brigades invested in risky military decisions. There was no difference between the high-CDQ (low-risk) subjects and the low-CDQ (high-risk) subjects either in number of risky decisions made ($F = 1.32$, $df = 1/58$), or in number of brigades invested in risky decisions ($F < 1$, $df = 1/58$). The mean number of risky decisions per period for high-CDQ subjects was 1.05, and for low-CDQ subjects was 1.27. The mean number of brigades invested in risky decisions per period for high-CDQ subjects was 2.78, and for low-CDQ subjects was 2.44.

A significant Periods effect was found, both for the number of risky decisions ($F = 8.53$, $df = 4/232$, $p < .01$) and for the number of brigades invested in risky decisions ($F = 4.83$, $df = 4/32$, $p < .01$). A Newman-Keuls analysis of the means revealed that in both analyses the risk scores were lower in Period 1 than in Periods 2-5. There were no significant differences in level of risk from Periods 2-5.

The number of risky decisions and number of brigades invested in risky decisions are both measures of the absolute amount of risk. They do not take into account the number of decisions made by the teams. As a result, one might contend that even though the low-CDQ subjects did not make more risky decisions than the high-CDQ subjects, they may have made more risky decisions relative to the total number of decisions made. That is, did they make a higher *proportion* of risky decisions?

The analysis of the third measure of risk, the proportion of risky decisions to total decisions, provides information relevant to this question. A one-way analysis of variance was computed on these scores. The Periods factor was not included because of the large number of zero frequencies obtained in the individual playing periods. Thus, the scores were summed across the five playing periods and analyzed for the entire game. An arc sin transformation (*cf.* 15) was made on the proportions before the analysis of variance. The analysis indicated that high-CDQ groups and low-CDQ groups did not differ in their proportion of risky decisions ($F < 1$, $df = 1/59$). The mean proportion of risky decisions for high-CDQ groups was .27, and for low-CDQ groups was .24.

Given the results of the analyses of the three risk measures discussed thus far, one might still offer an argument similar to the criticism that Pruitt and Teger (10) made of a study by Zajonc, Wolosin, Wolosin, and Sherman (16). Pruitt and Teger suggested that the decline exhibited by groups in the *percentage of times* the risky alternative was chosen (the measure of risk used by Zajonc *et al.*) is not directly comparable with a decline in the *level of risk* in the usual study of group risk taking. In the "usual study of group risk taking" the risk measure is the level of risk advised for each situation in the CDQ.

Similarly it might be argued that the three risk measures discussed thus far are not directly comparable with the level of risk in most risky-shift studies. In most studies "risk" is defined in terms of the level of risk of each decision. However, in the three risk measures discussed, "risk" is defined in terms of the number of times, or proportion of times, a risky decision is made.

The fourth measure of risk obtained in this study, the number of brigades invested in each risky decision, provides an index of the level of riskiness of each decision. A one-way analysis of variance was computed on these scores. The Periods factor was not included because of the large number of zero frequencies. The analysis indicated that high-CDQ groups did not differ from low-CDQ groups in the mean number of brigades invested in each risky decision ($F = 2.02$, $df = 1/59$). The mean number of brigades invested by high-CDQ subjects was 2.28, and by low-CDQ subjects was 1.87.

The analyses of all four different kinds of actual risk thus support the conclusion that high-CDQ subjects did not differ from low-CDQ subjects in their military riskiness. This is consistent evidence for the conclusion that CDQ scores are not related to actual risk-taking behavior in a complex situation involving international conflict.

3. CDQ Scores and Perceived Risk

The four measures of actual risk discussed above are objective measures that are independent of the subjects' perceptions of their riskiness. What relationship would we expect to find between CDQ scores and the subjects' perceived levels of their riskiness? If the subjects were accurately perceiving their behavior, we would expect to find no relationship between these two variables.

The two measures of perceived risk, on the Interim Report Forms and on the Decision Forms, were subjected to two-way analyses of variance—CDQ (high, low) \times Periods (1-5). The difference between the two CDQ groups in level of perceived riskiness was not significant, either as measured on the Report Forms ($F < 1$, $df = 1/118$) or as measured on the Decision Forms ($F < 1$, $df = 1/118$).

On the Report Forms there was a significant effect for Periods ($F = 36.97$, $df = 4/472$, $p < .001$). A Newman-Keuls analysis of the means showed that the subjects' perceived level of risk increased after Period 1, but did not change during Periods 2-5. These results parallel the Periods effect for actual risk. On the Decision Forms the Periods effect showed a pattern similar to that shown on the Report Forms, but the increase in perceived risk after Period 1 was not significant ($F = 1.76$, $df = 4/472$).

Thus, the subjects' perceptions of their riskiness were consistent with the findings on actual riskiness. Low-CDQ subjects did not perceive themselves to be more risky than did high-CDQ subjects. This conclusion was supported by the analyses of both kinds of perceived risk.

D. CONCLUSIONS

Some authors (e.g., 1, 7, 14) have felt that the risky-shift phenomenon is general enough to warn us of its dangers in the risk considerations of military and international policy-makers, where increased risk might work against our best interests. Noting that there are of course differences between actual military decision contexts and those studied in the lab in risky-shift studies, Kogan and Wallach point out that in emphasizing the relevance of such findings for military and national group decision making, "Our intention is the relatively modest one of showing that the kind of decision-making arrangement explored in the present work does have some important parallels in the real world" (7, p. 47). However, the findings of the present study suggest that even this relatively modest intention may be premature on the basis of present evidence. Research relating the CDQ to actual risk-taking behavior has shown only that performance on the CDQ is related to performance on simple risk-taking tasks (e.g., 6, 9). This may not warrant one's inferring important parallels in the real world of military and international policy.

It may be argued that the task in the present study was not the real world either. This is true, but the TNG may be as close as one can come to *experimentally* studying group decision making in international conflict. Other alternatives may be a field study of groups actually involved in such decisions (involving such problems as access to the groups and measurement of risk), or a real experimental war (involving such problems as cost, ethical considerations, and difficulty of obtaining subjects).

If groups do tend to be more risky than individuals in complex real-world situations, this would indeed indicate that research on the risky-shift effect has important implications for such decisions. However, the results of the present study suggest that we may not be justified in generalizing the findings of risky-shift studies using the CDQ to complex real-life decisions, such as those involving military and international policy.

E. SUMMARY

Research on the risky-shift effect has indicated that groups are more risky than individuals. Since many decisions involving military and international policy are made by groups, some authors have warned us of the potentially dangerous effects of the risky shift in these areas, where increased risk might work against our best interests. However, most risky-shift research has used as a measure of risk the Choice-Dilemma Questionnaire (CDQ), a paper-

and-pencil measure of hypothetical risk taking. Thus, the validity of generalizations from risky-shift findings to real-world military settings would be affected by the extent to which riskiness on the CDQ reflects riskiness in such settings. Two-man groups of male college students (assigned on the basis of similar CDQ scores) participated in a simulated international conflict. Subjects' CDQ scores were not related either to the actual level of riskiness of their military decisions, or to their perceived level of riskiness. Generalizations to real-world military decision making from risky-shift studies using the CDQ may not be warranted on the basis of currently available evidence, since the CDQ may not reflect actual military riskiness in the real world.

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Department of Psychology
Brigham Young University
Provo, Utah 84601

THE EFFECTS OF PERFORMING ONE ALTRUISTIC ACT ON THE LIKELIHOOD OF PERFORMING ANOTHER*¹

University of New Mexico

MARY B. HARRIS

A. INTRODUCTION

Most of the research on altruistic behavior has focused on only a single altruistic deed, without attempting to test for generalization. Even those studies that did permit more than one opportunity to be altruistic (12, 13) generally did not look at the effects of performing the first altruistic act as an independent variable. Freedman and Fraser (5), although not interested in altruism *per se*, did show in two different situations that performing one favor made a person more likely to perform a subsequent one; contrary to their expectations, this effect occurred even when the nature of the issues and tasks involved in the two requests was different. They suggested as a possible explanation that Ss who agree to perform one more-or-less-altruistic favor may change their self-perceptions and see themselves as activists; this change in self-perception may cause them to be more likely to perform favors for others in the future. McArthur, Kiesler, and Cook (10) tested this hypothesis by manipulating directly S's perceptions of themselves as doers and the inequity of a reward they expected; those in the "doer-inequity" group, whose perceptions of themselves as doers were presumably activated, were more likely to agree to pass out anti-air-pollution leaflets than those in the no-doer/no-equity group. The hypothesis that a changed self-concept is responsible for the "foot-in-the-door" effect is therefore tenable.

Another way of interpreting this effect might be on the basis of social norms. A norm of "social responsibility" has been proposed as an explanation for many altruistic behaviors (3), implying that when this norm is salient for an individual, he will be more likely to behave in accord with it. This proposed norm has been used to explain the facilitating effect of ob-

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serving an altruistic model; however, Harris (7) has found that salience of the norm appears not to be related to the model's behavior but rather only to the S's own altruistic behavior. Both she and Darley and Latané (4) have suggested that a social norm may not be an intervening variable which affects a person's decision about whether or not to be altruistic; instead it may be that performing an altruistic deed causes one to search for reasons and therefore makes the social norms governing altruism more salient. Nevertheless, it is possible that both effects are operating and that if a person performs one altruistic act, the social responsibility norm becomes more salient and he therefore is more likely to perform a subsequent helpful act. If persons who refuse to perform the first altruistic deed are subsequently more likely to perform a second one than persons who were not requested to do the first one, this would fit much better with the salience of the social norm hypothesis than with the changed-self-concept one.

One final possibility is that the Freedman and Fraser finding is due to the thanks that the persons received for the first favor. Aronfreed (1) has suggested that altruism is learned through a pairing of a person's own distress or joy with cues indicating the distress or joy of another. It may also be the case that persons learn to be altruistic through operant conditioning involving first a continuous and then a partial reinforcement schedule. Certainly it seems reasonable to hypothesize that young children are usually rewarded for helping others or sharing with them but that as they grow older the rewards for these behaviors become less frequent. If the philosophical debate is ignored as to whether a "good deed" for which one expects some thanks is truly altruistic (11), it is certainly possible that reward for one altruistic deed might make one more likely to attempt another helpful act. Although one study (6) failed to find an effect of vicarious reward, others (2, 8) have demonstrated some facilitating effects of observing a model's reactions to his own altruism. The present study attempted to assess (a) whether, in fact, performing an altruistic deed in the absence of direct or vicarious reward makes one more likely to perform another, and (b) the effects of feedback (reward, punishment, or none) upon subsequent altruistic behavior.

B. EXPERIMENT ONE

1. Design

This experiment was designed to see whether or not the foot-in-the-door effect would hold in another situation, in which no thanks for the first deed were given. Moreover, the first helpful acts requested were ones which most

people were expected to grant and which were so common that they seemed unlikely to change anyone's perception of himself—namely, telling someone the time or giving him simple directions. The dependent measure used was a request for a dime, a measure previously used by Darley and Latané (4) and by Latané (9). *Ss* were 54 people in the Albuquerque area who did not know they were participating in an experiment; *Es* were nine undergraduate students who received a minuscule bonus to their grade in a human development course for participating. As in the procedure used by Darley and Latané (4) and by Latané (9), *Ss* were stopped on the street and asked, "Could you please give me a dime?" after first being asked, "Excuse me, I wonder if you could tell me what time it is?" (Time condition); "Excuse me, could you tell me how to get to Central Avenue?" (Directions condition); or "Excuse me," only (Dime condition). When the time or directions were given, *Es* repeated the time or directions in a neutral tone before requesting the dime. No other words were spoken by *E* until after the *S* had responded or failed to respond to the request for the dime. Each *E* ran six *Ss*, one man and one woman in each of the three experimental conditions, one right after another. Because the *E* did not look at the paper telling him the *S*'s condition until the *S* approached, no bias entered into assignment to conditions. Locations varied from campus to shopping centers to busy streets; *Ss* appeared to vary in age, but no *E* had trouble classifying them by sex.

2. Results

All *Ss* who were asked for directions gave them. With one exception, all *Ss* wearing watches gave the time. Responses of all *Ss* to the request for a dime were scored, regardless of their responses to the first request. Only 11.11% of *Ss* in the Dime Only condition gave the *E* a dime, as compared with 44.4% of *Ss* in the Time condition and 38.9% of *Ss* in the Directions condition.

A chi-square test revealed that fewer *Ss* in the Dime Only condition than in the other two conditions combined gave the *E* a dime, as predicted ($\chi^2 = 5.19$, $p < .05$). Although the four male *Es* received a total of 11 dimes and the five female *Es* received only six, this difference was not statistically significant ($t = 1.66$, $df = 7$).

Nor was there any significant difference in the number of dimes given by men (10) and women (seven). Thus the hypothesis that people who have been asked to do a small favor but not thanked for it would subsequently be more generous was confirmed.

C. EXPERIMENT TWO

1. *Design*

The purposes of Experiment 2 were two fold: to generalize the findings of Experiment 1 to a situation in which the two requests were seen as totally unrelated and to assess the effects of direct feedback to the *S* about the recipient's reactions to his altruistic act.

Ss were 276 students in 12 classes at the University of New Mexico. Each of four classes was paired with another section of the same course taught by the same instructor, and the "experimental" sections were selected randomly from each pair. The fifth instructor taught four physical education courses; two of those classes were randomly selected as the experimental classes. The courses ranged from freshman to graduate level and were in four different departments.

Two weeks before the dependent measure, each instructor read the following announcement to students in his experimental sections:

As you are probably aware, many qualified high school students in the Albuquerque area do not consider attending the University of New Mexico. Many of the students come from families where no close relatives have been to college and the majority are members of ethnic minority groups. These students often have the impression that the University would not be interested in them and often have false impressions of the type of people who do go to college. Unfortunately, the typical recruitment procedures of having admissions officers speak to large groups of students seems to attract only students who are already planning to go to college. We are hoping that some personal contact with these students will cause them to consider seriously the possibility of going to college and particularly to U.N.M.

We are therefore asking U.N.M. students to volunteer to take a few minutes of their time and write a letter to a high school student, simply saying that you are a student at U.N.M. and would be willing to answer questions that he might have about what it is like to be a student at U.N.M. Please be sure to include your name and address so that the student can write you for more information, if he wishes. Our committee will fill in the name of the student to whom your letter will be sent and will address and mail the letters. We are hoping that even this small amount of personal contact will cause students to consider more seriously the possibility of going to college.

After the announcement was made, the instructor said that "they" had sent some stationery around with the announcement and that he would be willing to give those students in the class who wished to write letters a few minutes in which to do so. He then passed out the stationery and collected

the letters. Attendance was taken, inconspicuously in those classes in which it was not the usual custom.

After the letters were collected, one-third of those from each classroom were assigned to the positive response condition, one-third to the negative response group, and one-third to the no-response group. Six graduate students and the author each took equal numbers of the letters assigned to the positive comments and negative comments condition. Individual letters were written to the Ss in these conditions which purported to be from the high school students who had received the letters volunteering to talk to them about the university. The seven letter-writers varied their handwritings, stationery, pens, and wording of the letters. All letters in the positive comments group contained expressions of gratitude for the S's kindness in offering to tell him about U.N.M.; letters in the negative comments condition varied from a polite "you're wasting your time," to suspicious ("What's in it for you?"), to rude ("Mind your own business!"). To check on the quality of the letters, every letter was classified by an independent judge into the positive or negative comments group, and any letters that a judge felt did not appear clearly positive or clearly negative or which seemed at all "phony" were not sent. Letters were mailed on different days over a period of about a week.

The dependent measure consisted of the Ss' responses to a second, unrelated request. Two weeks after the original request and three to 10 days after the letters should have been received, a student with theatrical experience went to all 12 classes and made the following speech, which she had rehearsed:

Hello, I'm — —, a graduate student in Educational Foundations here at U.N.M. Many of the students here have become kind of concerned about the image the people of New Mexico have of U.N.M. I went up to Santa Fe with some graduate students to lobby against the reduction of Graduate Assistants a few weeks ago and it was pretty clear that lots of the legislators didn't know very much about the university and didn't have any idea of what U.N.M. students are like. So we'd like to start a kind of—oh, not exactly a publicity campaign—to let people know sort of what the university does for the community, what students are really like and that kind of stuff. We'll need people to do all kinds of things; for instance, stuff envelopes, make phone calls, talk with people, write their representatives, and so on. If you'd be willing to spend a little time doing any of these things to help us out, would you please put your name, phone number or some way in which we can reach you, on this paper I will pass out. I don't know exactly when we'll be in touch with you because we're not too well organized yet, but I hope we'll be able to start pretty soon.

She then passed around a piece of notebook paper and collected signatures

in each class. Because it was important that she remain naive as to which class had received the experimental manipulation, the *Ss* were not debriefed until the following week. The original letters from the college students were later turned over to the student government to be used for recruiting high school students as originally promised.

2. Results

No formal check on the effectiveness of the manipulations was made, but there is strong circumstantial evidence that no *Ss* were suspicious. The letters written by the college students ranged from short but polite to very long and personal. Most seemed to indicate a deep concern for the unknown high school student to whom they were directed. In every class some of the students mentioned to their instructors that they had received letters from a high school student, and a few appeared to be quite concerned about the negative letters. Several were quite eager for more information and were disappointed that the letter they received contained no return address or way to contact the writer. A similar lack of suspicion appeared to be true with the dependent measure; although a few students asked the confederate questions about the "publicity" organization, no one mentioned anything about the letters. When the experiment was finally explained to the students, all indicated interest and surprise. Since the only social psychologist at the university does no deception research, there is little doubt that the experimental naiveté was genuine.

Moreover, the nature of the requests had high face validity. There are many lower SES high school students from minority groups in Albuquerque who do not go on to college, and concern about attracting these students has frequently been voiced by faculty and students. The second request was also very reasonable; at the time it was made, the state legislature, which was still in session, was considering bills to lower the appropriations recommended for the university and to continue a committee designed to look into affairs at the university which was regarded with great antagonism by the U.N.M. community.

The percentages of *Ss* in each condition who volunteered to assist with the publicity campaign are as follows: 12.9% of those in the positive comments group, 20.6% of those in the negative comments group, 20.0% of those in the no comments group, 16.7% of those who refused to write the letter, 9.5% of those who were absent when the request for letters was made, and 8.8% of those in the other section of the courses. Due to absences, the numbers of students present for the dependent measure are not the same in the three

feedback conditions. As predicted, a higher percentage (17.6%) of those who were requested to write the letters than of those who were absent or in the other class (8.9%) volunteered to help with the publicity campaign ($\chi^2 = 4.57$, $df = 1$, $p < .05$); this is also true if those who refused to write the letter are excluded ($\chi^2 = 4.36$, $df = 1$, $p < .05$). This effect is not due to any single class, since in all six pairs of classes, the students present at the request for letters were more likely to volunteer than those absent or in the other section.

Contrary to expectation, no significant differences were found between the percentages of Ss volunteering in the three feedback conditions. No support was therefore provided for either the reinforcement hypothesis (If you're rewarded for one good deed, you'll be more likely to do another) or the "Boy Scout" hypothesis (One good deed a week, certified by thank you letter, is sufficient to earn your merit badge). No sex or class differences were noted.

D. DISCUSSION

The results of both experiments support the hypothesis that doing one good deed makes a person more likely to do another. This effect clearly does not depend on the reinforcement received, since Ss in Experiment 1 were not thanked for their good deed, and Ss in different reinforcement conditions in Experiment 2 did not differ on the depending measure. The effect of the first favor, as Freedman and Fraser (5) also found, appears to persist over time and to generalize to a totally new situation. The "foot-in-the-door" phenomenon has now been experimentally validated in four different situations; however the explanation suggested by Freedman and Fraser (5) does not appear adequate to explain the present results. If it were true that performing a favor or altruistic act changes one's self-concept, then those who refuse to do the first good deed might be expected to be even less likely to perform a second than those who were not asked to perform the first favor. The fact that 16.7% of those who refused to write a letter and 8.9% of those who were not asked to do so volunteered to help with the publicity campaign in Experiment 2 is clearly in contraction to such a prediction. Moreover, in Experiment 1, it seems very unlikely that giving someone directions or telling him the time changed a S's self-concept, as most people probably already think of themselves as people who would give another the time of day.

It is possible that the reinforcement hypothesis was not adequately tested in the present study, because of the confounding effect of Ss' discussing the letters they received with each other. Moreover, individual differences in personality, cultural background, and reinforcement history might be so great as to

obscure the effects of the single reinforcement experienced in Experiment 2. Until some support for such a hypothesis is forthcoming, however, the most adequate explanation for the present results, in spite of its vagueness, is probably the social norm interpretation. If being asked to perform one altruistic act makes the idea of doing good or the norm of social responsibility more salient, then one would expect that those who receive no feedback or who refuse to perform the act would be more altruistic subsequently than if no good deed had been requested. As Darley and Latané (4) point out, however, such an explanation may be so general as to be meaningless. Future research on the specific factors which make a social norm salient and on cultural and individual differences in altruistic behavior and responsiveness to norms should help to explain the fact that one good deed leads to another.

E. SUMMARY

In two experiments a request for an altruistic act was shown to increase the probability that a person would grant a second request. In Experiment 1 people asked for the time or for directions were more likely to give a dime when asked than those exposed to the prior request. In Experiment 2 students asked to write letters encouraging high school students to attend college were more likely to volunteer to assist in a university publicity campaign than those not exposed to the prior request; however, reinforcement for performing the first altruistic act did not affect likelihood of volunteering to assist. It was suggested that the results could best be interpreted by postulating that requesting one altruistic act increases the salience of the norm of social responsibility and makes subsequent altruism more likely.

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Department of Educational Foundations
The University of New Mexico
Albuquerque, New Mexico 87106



BIRACIAL AGGRESSION: I. EFFECT OF VERBAL ATTACK AND SEX OF VICTIM*¹

Department of Psychiatry, Duke University

WILLIAM D. GENTRY

A. INTRODUCTION

As Forbes and Mitchell (9) recently pointed out, there is a serious paucity of empirical data regarding biracial frustration and aggression. The majority of studies reported to date dealing with interpersonal aggression (1, 3) have involved a uniracial situation, principally one in which both the instigator of the aggression and the victim of frustration are White. Few attempts have been made to study aggressive behavior between non-Whites—e.g., Negroes— or between Whites and members of other races (7).

As was also suggested by Forbes and Mitchell, an area of chief concern involves the effects of White frustration and attack on Negro social behavior, particularly manifestations of overt anger and aggression. In general, previous investigators have indicated a marked tendency by Negroes to conceal strong feelings of anger and expressions of direct aggression elicited by White provocation. Yarrow (17) noted in a biracial camp situation, for example, that Negro children of all ages (*a*) were subjected to considerable hostility from White children, yet (*b*) rarely expressed hostility except towards other Negroes, and (*c*) limited expression of emotionality primarily to covert (fear, withdrawal) rather than overt (fighting, obscene language) behaviors. Brainerd (2) found that Negro Ss exhibited less outward-directed aggression in response to pictorial scenes of Whites frustrating Negroes than was true of Negro Ss responding to scenes of Negro-Negro frustration or White Ss responding to either White-White or Negro-White frustration. Similarly, Forbes and Mitchell, also using pictorial frustration, reported that even though adult female Negroes attributed more blame to a White frustrating a Negro than a Negro frustrating a White, they did not demonstrate anticipated feelings of anger or outwardly directed aggression.

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The main purpose of the present study was to investigate the effects of interpersonal verbal attack on aggression and aggression-related behaviors in a biracial situation involving a White instigator and Negro victim. Previous studies, utilizing a White instigator and victim, have shown verbal attack to be a potent antecedent not only to overt aggressive behavior (11, 12), but also to feelings of anger and associated vascular arousal, the latter in the form of elevated diastolic blood pressure (10, 12, 14). An additional purpose was to examine differences with respect to sex of victim; i.e. both male and female Negro *Ss* were included and subjected to attack by White peers of the same sex. Buss (4, 5) and Taylor and Epstein (16) found that, in all White interactions, males tended to be more aggressive toward same-sex peers than did females, thus supporting the widely held belief that men are generally the more aggressive sex.

B. METHOD

1. *Subjects and Experimenters*

Twenty-eight male and female Negro college students participated in the four experimental conditions in a 2×2 factorial design. The *Ss* were undergraduates enrolled in psychology courses at a predominantly (95%) Negro university, where the relationship between the black majority and White minority is generally considered good. *Ss'* age range was between 19 and 28, with a mean of 22 years. All were paid volunteers.

There were two experimenters (*Es*) assigned to the study, one male and one female, and a male experimental assistant (*E-1*). The *Es* were both White, 22 years old, and students at a predominantly White university. The sex of *E* was always the same as that of the *S*; i.e. the female *E* interacted with female *Ss*, the male *E* with male *Ss*. The experimental assistant, also White and 27 years old, was included in the experimental situation for the purpose of measuring *Ss'* blood pressure during various parts of the procedure.

2. *Procedure*

On entering the experimental room, each *S* was met individually by the appropriate *E* and *E-1*, both of whom introduced themselves as students working on a project in psychology. The *E*, seated directly across from the *S*, briefly described the study as one dealing with physiological correlates of intellectual performance and informed *S* that his blood pressure would be recorded by *E-1*. The blood-pressure apparatus was then attached to *S's* left arm. The *S* was cautioned against talking or unnecessary body movement,

since these tended to disrupt vascular measurement, and told to relax for five to eight minutes while *E-1* recorded his blood pressure. Systolic and diastolic blood pressure readings were then taken at one-minute intervals via the auscultatory method until three consecutive identical readings were obtained, the latter constituting a pretreatment level of vascular activity prior to experimental manipulation. Following this, *E* read a standard set of experimental instructions to *S*:

The following experiment will investigate the physiological correlates of performance on an intellectual task. As such, you will be asked to take a brief test of general intellectual ability or *IQ*. The test will be a timed test and you will have to finish it in the time allowed in order to pass it. If you do not complete the test in the allowed time, you then fail it. While the test is a short and relatively easy test, it is a good measure of general intelligence. Almost all college students who take the test pass it.

The *E* then explained how the test worked and answered any questions *S* might have by rereading the relevant portions of the instructions.

The *Ss* were not told how much time they were allotted for test completion and thus all were allowed to finish successfully, regardless of ability, and were told so by the *E*. Half of the *Ss* (seven males and seven females), however, were subjected to verbal attack (insult) from *E* following test completion. The *E* stated:

Well, you completed the test successfully in the time allowed, so therefore you passed it. But, frankly, I'm surprised because I don't think you cared one bit about the whole thing. I said at the beginning that it was important to do your best and I don't think you did. In fact, I think you've been immature and uncooperative throughout the experiment. Well anyway, just sit back while we take your blood pressure.

The other half of the *Ss* served as controls; they were told by *E*:

You've completed the test successfully in the time allowed, so therefore you passed it. Now just sit back while we take your blood pressure again.

Upon completion of this segment of the procedure, *S*'s blood pressure was again recorded by *E-1*. Five consecutive readings of systolic and diastolic pressure were obtained at one-minute intervals during the posttreatment phase.

The blood pressure apparatus was then removed and *S* was administered two brief questionnaires. The first, a mood questionnaire, consisted of five seven-point self-report scales on which *S* was asked to indicate his mood at that moment. The five scales were anchored by polar adjectives: Happy-Sad, Angry-Not Angry, Relaxed-Excited, Strong-Weak, and Elated-Depressed.

The second questionnaire was presented to *S* as one dealing with his attitude toward *E* and the experiment and was identical to that used by Feshbach (8) to measure verbal aggression. The *E* explained that the information on this latter questionnaire was being collected for the psychology department, that it was anonymous, and that it would in no way affect *S*'s reward for participation in the experiment.

Having completed the questionnaires, the *S* was informed of the true nature of the study and sworn to secrecy.

C. RESULTS

1. *Anger*

Treatment differences were obtained for only one of the five emotional states listed on the mood questionnaire, that of Angry-Not Angry. *S*s insulted by a White peer *E* reported significantly more anger than *S*s not insulted ($F = 8.51$, $df = 1/24$, p less than .01), the mean level of felt anger following attack being almost twice that following no attack (2.79 and 1.50 on a seven-point scale, respectively). No differences were noted for sex of victim: i.e., male and female *S*s reported equivalent levels of anger in both the control and attack conditions.

2. *Aggression*

From the *S*s' response to the attitude questionnaire, three measures of verbal aggression were obtained (8). A *total aggression* score was derived by assigning numerical values to each response on the six questions referring to *E* and the experiment, the least aggressive response receiving a score of 1 and the most aggressive a score of 6. A *personal* or direct verbal aggression score was calculated from responses to statements concerning only *E*: e.g., how competent was he and did you like or dislike him? Similarly, an *impersonal* or indirect aggression score was obtained from responses to the questions about the experiment proper: e.g., how worthwhile was it and how much of a contribution will it make to the field of psychology?

Analysis of variance results for the three aggression measures indicated that verbal attack was indeed a potent agent of provocation. Insulted *S*s were consistently more aggressive in their overall evaluation of *E* and the experiment (total aggression: $F = 7.44$, $df = 1/24$, p less than .025), as well as in their specific attitude toward either (personal aggression: $F = 4.30$, $df = 1/24$, p less than .05; impersonal aggression: $F = 6.55$, $df = 1/24$, p less than .025), than were noninsulted *S*s. In addition, there was a significant

attack \times sex-of-victim interaction for indirect, impersonal aggression ($F = 6.51$, $df = 1/24$, p less than .025). Insulted Negro females were more hostile in their evaluation of the experiment (mean score = 10.14) than were insulted males (mean = 8.14) or nonattacked males (mean = 8.14) or females (mean = 7.71). Females receiving insult also answered positively more often to a seventh question "Is there anything you disliked about the experiment?" than did insulted males or control Ss (chi square = 8.86, p less than .005).

A Pearson product-moment correlation coefficient of .59 was obtained between levels of self-reported anger and total aggression scores (p less than .001)—i.e., the greater the anger, the more aggressive the evaluation of E and the experiment.

3. Vascular Arousal

The systolic and diastolic blood pressure data were treated separately and arranged in the following manner. Pretreatment basal levels were represented by the three identical readings obtained prior to experimental manipulation. Posttreatment levels were obtained by calculating the mean of the first three blood pressure readings during the second period of vascular recording. Pre to posttreatment difference scores (measured in millimeters of mercury) were noted and analyses of covariance² were performed. In each case, the pretreatment level of response served as the covariate in the analysis.

There were no significant differences attributable to either experimental variable for systolic blood pressure change. For diastolic pressure, however, the main effect of attack was significant beyond the .01 level ($F = 9.15$, $df = 1/23$). Insulted Ss exhibited a mean elevation of 7.00 millimeters of diastolic pressure against a mean increase of only .72 millimeters for non-insulted Ss. No differences appeared as a function of sex of victim.

D. DISCUSSION

The results of the present study clearly demonstrate a relationship between interpersonal verbal attack, aggression, and aggression-related behavior in a biracial situation. Negro college students subjected to insulting criticism from a White same-sex peer reported more anger, expressed more verbal aggression, and manifested a greater rise in diastolic blood pressure than did their

² Sternback (15) suggested that with nearly all autonomic variables, the magnitude of response to stimulation depends at least partially on the baseline (prestimulus) level of activity. Covariance analysis is one method of analyzing physiological data that takes such a relationship into account.

counterparts who received no insult. These data parallel those of uniraical studies (11, 12) in which both the instigator and victim of the attack were White.

The present results do not, however, support earlier findings (2, 9, 17) which emphasize a relative absence of expressed anger and aggression in Negroes following White provocation. The reasons for this appear twofold. First, the present study represented a real life, face-to-face biracial encounter, as opposed to the artificial, projective encounters—i.e. cartoons of Whites attacking Negroes—used by Brainerd and Forbes and Mitchell, and therefore possibly a more powerful stimulus for eliciting hostile feelings and actions. Secondly, one must consider the rapidly changing social position of Negroes in this country during recent years since the Yarrow and Brainerd studies and the impact this has had on the Negroes' tendency to express openly and outwardly aggression provoked by Whites (6). Unquestionably, these young Negro college students appeared more *reactive* to White attack than did the middle-aged Negro females studied by Forbes and Mitchell.

Of greatest interest to this author were the sex of victim differences noted for expressed verbal aggression. Not only were attacked Negro females more aggressive than attacked males in their attitude towards the experiment per se, but they were also more spontaneously hostile immediately following experimenter insult. Four of the seven attacked females vehemently protested *E*'s critical comments with such statements as "I did so cooperate; I did just what you told me!" and "I did so try my best; I passed the test, didn't I?" whereas none of the attacked males protested.

While it is possible that such factors as (a) the female *E* being differentially stressful in her insulting remarks or (b) females *Ss* being generally more cooperative and involved in the bogus test exercise, thus making *E*'s critical comments more unjust in their case, could produce these differences in expressed aggression, such is highly unlikely, since both male and female *Ss* evidenced equivalent levels of anger and vascular arousal following attack. A more plausible explanation is that Negro males tended to inhibit overt expression of hostile impulses more so than did Negro females. Grier and Cobbs (13) have suggested that the Negro male in particular grows up with male models characterized as being weak, powerless, inferior, and totally dependent on Whites who in turn frustrate and attack them, as well as in a mother-son relationship the primary goal of which is the blunting of masculine assertiveness and aggressivity. These data may reflect in part the result of such a learning history. Along these lines, it would be interesting in the Forbes and Mitchell type study to see if middle-aged Negro males would

attribute blame to Whites-frustrating-Negroes to the same degree as did their female Ss. Another possible explanation involves the type of attack and aggression employed in this study; i.e., verbal. Buss (4, 5) has suggested that sex differences with respect to aggression may depend at least partially on the type of aggressive behavior studied and, along with Taylor and Epstein (16), has shown that, in all-White studies of physical aggression (delivery of electric shock), males are more aggressive towards same-sex peers than are females. Perhaps with physical attack and/or aggression, the sex of victim differences noted in this study would disappear or in fact reverse themselves?

E. SUMMARY

The effects of interpersonal verbal attack on anger, aggression, and vascular arousal in a biracial situation were investigated. Half of 28 male and female Negro college students were subjected to insult from a White peer experimenter of the same sex; half were not. Attack led to greater self-reported anger, expressed direct and indirect verbal aggression, and elevated diastolic blood pressure than did no attack. Sex-of-victim differences were noted only for aggressive behavior, with attacked females demonstrating more indirect aggression than attacked males or control Ss.

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Department of Psychiatry
Duke University Medical Center
Durham, North Carolina 27710

REDUNDANCY AND CONGRUENCE OF CONTRAST STIMULATION AS DETERMINANTS OF ATTITUDE CHANGE*

*Urban Analysis Concentration and Modernization Processes Concentration,
The University of Wisconsin—Green Bay; and Department of
Psychology and Education, Cameron State College*

NICHOLAS P. POLLIS, CAROL A. POLLIS, AND JAMES A. RADER

A. INTRODUCTION

In attitude-relevant real-life situations individuals are exposed frequently to the same or similar persuasive messages or information. This redundancy of exposure is not typical of current attitude research in the laboratory situation where there is limited exposure to domain-related stimuli. While the effects of redundancy did receive some research attention in the early days of psychology, this research did not yield theoretically meaningful results (3). In general, there is now little systematic attention paid to the shaping of attitudinal response sets as a consequence of the natural sequential flow of attitude-related information and persuasion, even though Rosenberg's treatment (5) of impression formation and discussion of the relative merits of averaging *versus* summation models is suggestive of the need to consider attitude change as the weighted outcome of serial stimulation, and Bieri *et al.* (1) report research on clinical judgment in which sequential contrast-assimilation effects are found to be a function of the presentation pattern of context anchoring.

The extent to which sequential judgment acts, as compared to non-sequential judgment acts, alter the judgment scales and attitudes of individuals is also an important question that can be derived from social judgment theory (6). In particular, the consequences for individuals who experience repeated exposure to stimuli lying outside of established scales needs greater exploration. Such contrast situations, during which individuals are bombarded with contrast stimulation composed of counterattitudinal messages in relation to the latitude of acceptance and/or the total scale of judgment, are important to understanding attitude change. While the distance of new stimulus material from a person's own position has been the source of controversy—dissonance *versus* social judgment theory (3)—the

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issue appears to be resolving in the direction of finding attitude change to be an increasing monotonic function of discrepancy under conditions of low ego involvement and a nonmonotonic function of discrepancy under conditions of high ego involvement (4). Another facet of the discrepancy issue relates to the repeated presentation of new information which is either congruent or incongruent with an individual's own attitude on a given issue. While congruence-incongruence and discrepancy are related inasmuch as incongruent stimuli are usually more attitude-discrepant than congruent stimuli (when attitude is defined as own position along the judgment continuum), the question of congruence-incongruence should be considered independently of discrepancy.

In the present study, the Q-sort variant known as the own-categories technique was used to investigate some effects of redundancy and congruence on judgment scales. With this technique, subjects place items from a stimulus pool into categories along a judgment continuum and then label those categories as to their acceptability or unacceptability. The own-categories technique was used because it allows one to establish judgment scales under controlled laboratory conditions and to expose those scales to new contrast stimulation so that the new stimulation is either congruent (consistent) or incongruent (inconsistent) with the subject's attitude. Some subjects can be exposed to the new information only once, while others can be exposed repeatedly.

The expectation was that the variables of redundancy and congruence would generate differential effects on subjects' categorization processes, since there is general agreement that congruence and incongruence of new information and the presentation of persuasive messages are important factors in attitude formation and change. The direction and nature of these effects were not predicted, however, since in the design subjects formed judgment scales in response to a restricted segment of the judgment continuum and were then tested for shifts as a function of subsequent contrast stimulation of those scales.

B. METHOD

Two hundred male freshmen college students served as subjects in the experiment. Fifty subjects participated in each of the four experimental conditions which were generated by two levels of redundancy and two levels of congruence. Each individual was placed in a given condition on the basis of random assignment.

The stimulus material consisted of 21 statements and two paragraphs con-

cerning various stances on the issue of sex education in elementary and secondary schools. The 21 statements were selected from a larger pool of statements by 20 judges who were instructed to place them into seven categories that ranged from extremely anti sex education (1), to neutral (4), to extremely pro sex education (6). An effort was made to eliminate judgment language (7) from the response sets of judges and to emphasize the discriminative function by asking judges to concentrate on the objective task and to eliminate their personal opinion. When an item was placed in the same category by 80 percent of the judges, it was retained for use in the study. The final stimulus pool consisted of 21 statements grouped into units of three for each of the seven categories along the continuum (e.g., "sex education will always lead to moral decay," "sex education should be made available in all schools"). The paragraphs were also selected from a larger pool and met the same criteria of placement as the statements. One paragraph represented an extremely anti position on sex education (1) and the other an extremely pro position (6). The redundancy value of these paragraphs was high inasmuch as they were made up of several extreme statements of either an anti or pro nature. The statements, typed on sections of index cards, were randomly arranged on a table in front of the subject and were readily available for manipulation and simultaneous surveillance. Subjects were instructed to arrange the statements along an anti-pro continuum by creating as many categories as they wanted and labelling the categories as to their acceptability-unacceptability from personal standpoints. This was used to determine subjects' latitudes of acceptance, rejection, and noncommitment. After all experimental tasks had been completed, subjects made a checkmark along a line marked anti at one end, pro at the other, and neutral in the middle and discussed in writing their positions on sex education in schools.

Subjects were run on an individual basis. The order of subjects used was rotated among the four conditions to eliminate any experimenter-related order, practice, or fatigue effects. Each subject was met in a room made available for the experiment. He was then asked to follow one of four procedures depending on the condition to which he was randomly assigned. The NRC (nonredundant congruent) Condition consisted of a standard application of the own-categories technique utilizing 12 statements along the anti to neutral segment of the judgment continuum (categories one through four). After a pause, this was followed by presentation of the entire stimulus range, positions one through seven (all 21 statements), and another application of the own-categories technique. The NRNC (nonredundant noncongruent) Condition was identical to the NRC Condition except that scale

positions four through seven, the neutral and pro positions, were used on trial 1 prior to full presentation of the entire scale on trial 2. The RC (redundant congruent) Condition also consisted of a standard application of the own-categories technique using positions on the anti end of the continuum—categories one through four on trial 1—followed by presentation of the extremely pro paragraph with a scale value of seven. This was followed by having subjects again use the own-categories technique on the entire stimulus range (categories one through seven). The RNC (redundant non-congruent) Condition was analogous to the RC Condition except that initial items on trial 1 were those representing scale positions four through seven, and the interpolated paragraph was the extreme anti position (scale value one). Since the interpolated material had a scale value of one or seven opposite to the range of stimulation initially made available on trial 1 and since subjects had previously scaled those items, the interpolated paragraphs served the dual purpose of providing (a) contrast stimulation, and (b) redundancy (the seventh and first categories were again represented in the final stimulus array presented on trial 2). The labelling of a condition as congruent (C) or noncongruent (NC) was dependent on the attitude-congruence of the new material presented on trial 2 rather than the attitude-congruence of stimulus material presented on trial 1.

C. RESULTS

The postexperimental assessment indicated all subjects were proponents of sex education. This made it possible to treat all situations where the stimulus material was anti sex education as attitude-incongruent and all situations where the material was pro sex education as attitude-congruent.

The first dependent measure was the number of categories subjects generated in their sorts. On trial 1 congruence-incongruence was significant for the number of categories used ($F = 14.33$, $df = 1/196$, $p < .01$). Subjects categorizing and evaluating incongruent anti statements tended to use a smaller number of categories than did subjects categorizing congruent pro statements. This difference was maintained during trial 2 when subjects were exposed to the entire stimulus range ($F = 7.53$, $df = 1/196$, $p < .01$). It is interesting that the redundancy (message/no-message) variable had no effect on the number of categories generated in trial 2. Congruence by redundancy interaction effects were also insignificant.

A second dependent measure and one that served as a basis for defining a subject's own position on the issue was the most acceptable category. Assessment of the relative position of a given subject on the judgment continuum

was made by calculating the mean value of statements he placed into the most acceptable category. Mean values of items found in the most acceptable category on trial 1 for Conditions NRC, NRNC, RC, and RNC were $\bar{X} = 3.13$, $\bar{X} = 5.61$, $\bar{X} = 3.15$, and $\bar{X} = 5.50$, respectively, demonstrating the tendency of individuals to readily form scales and define a most acceptable category on a situational basis. No tests of significance were performed on these data, since the scale values of stimuli presented on trial 1 were different (four through seven or one through four). When the full and complete range of stimuli were presented on trial 2, the effects of congruence-incongruence on the means of the most acceptable category were not significant. Interaction of congruence with redundancy was also insignificant. The redundancy variable was significant, however ($F = 8.18$, $df = 1/196$, $p < .01$). Subjects who received the message shifted their attitudes, as measured by the mean value of the most acceptable category, towards a more conservative pro position.

The number of categories in the latitude of acceptance was also considered. There were no significant differences on trial 1 for redundancy or congruence. On trial 2 redundancy was significant ($F = 6.44$, $df = 1/196$, $p < .05$). Subjects tended to use a greater number of categories under message as compared to no-message conditions. Congruence was not significant and there was no significant interaction effect. Another measure made was the extent to which the mean values of the most acceptable category shifted in the direction of newly presented stimuli; that is, the extent to which this value changed from trial 1 to trial 2 as a function of being exposed to the entire judgment continuum and, in Conditions RC and RNC, the anti and pro paragraphs. Those subjects who were initially exposed to incongruent stimuli (anti statements) moved farther in the direction of the new stimuli ($F = 106.31$, $df = 1/196$, $p < .001$). Redundancy was not significant, but there was a significant interaction effect ($F = 4.94$, $df = 1/196$, $p < .05$). Where the message was attitude-incongruent or anti, the amount of change in the anti direction was greater with the message than without the message, but when the message was attitude-congruent or pro, the amount of change in the pro direction was less with the message than without the message.

D. DISCUSSION

The finding that attitude-congruent stimuli when presented by themselves are more finely discriminated than attitude-incongruent stimuli when presented by themselves suggests that individuals pay more attention to and

are more responsive to stimuli from the segment of the judgment continuum which is consistent with their own position. This differential tendency to categorize congruent stimuli more finely raises questions concerning such effects when the entire stimulus array is initially presented as is often the case in research where the social judgment model is used. If there is a difference between methods (only congruent or incongruent stimuli *versus* the entire array), as may be the case, then the method of stimulus presentation that constitutes the best analogue to real-life situations would be clearly preferable.

The effect of presentation of contrast stimulation on attitude as defined by the most acceptable category is a provocative finding. Whether congruent or incongruent, contrast stimulation (in relation to the scale established in trial 1) has the effect of displacing the most acceptable category towards a less pro part of the judgment continuum. For this to occur, subjects who were initially exposed to the pro part of the continuum changed *more* in the direction of the contrast stimulation or anti paragraph than did subjects who were initially exposed to the pro part of the continuum but who did not receive the paragraph. On the other hand subjects who were initially exposed to the anti part of the continuum changed *less* in the direction of the contrast stimulation than did subjects who were initially exposed to the anti part of the continuum but who did not receive the paragraph. It would appear then that contrast stimulation and redundancy have the effect of making a pro attitude less pro regardless of whether the contrast stimulation is attitude-congruent or attitude-incongruent and that change is enhanced by attitude-incongruent contrast stimulation and inhibited by attitude-congruent contrast stimulation.

A good deal of theorizing concerning attitude formation and change (2) employs a static model where internal or residual variables become activated in response to domain-related stimulation. While recent analyses consider a number of factors that can be located within the static model, such as ego-involvement, discrepancy of message from attitude, and credibility of communicator (4), not enough attention has been paid to the fact that there may be significant swings and shifts in attitude and overt behavior as a function of the specific flow of domain-related stimulation. The social judgment model provides an operational basis in terms of which these patterns of change and formation can be explored.

E. SUMMARY

The effects of presenting redundant-nonredundant and attitude congruent-incongruent contrast stimuli upon social judgment scales established in the

laboratory were explored. The nature and pattern of changes occurring in these judgment scales indicate that the traditional model of attitude change should consider and incorporate sequential effects of naturally occurring attitude-related contrast information. Congruence interacted with redundancy so that under redundant conditions subjects' attitudes were displaced more in the direction of incongruent stimuli and less in the direction of congruent stimuli. In addition, it was found that, in general, congruent as compared to incongruent stimuli were more finely discriminated.

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Urban Analysis Concentration
The University of Wisconsin—Green Bay
Green Bay, Wisconsin 54302



UNINTENDED EXPERIMENTER BEHAVIOR AS EVALUATED BY JAPANESE AND AMERICAN OBSERVERS*¹

Harvard University

YOSHIYASU UNO,² JUDITH H. KOIVUMAKI, AND ROBERT ROSENTHAL

A. INTRODUCTION

Only a fraction of the behavior emitted by a psychological experimenter as he conducts his research can actually have been programmed as part of the experiment (2). Yet, the unprogrammed, unintended behavior of the psychological experimenter has been shown to affect unwittingly the results of the experimenter's research (4). In one study, for example, it was shown that the degree of vocal emphasis given the various response alternatives that the experimenter read to his subjects was a significant predictor of his subjects' responses to a photo rating task (1).

The purpose of the present study was to investigate further the determinants and consequences of the unintended experimental behavior of the psychological experimenter. In particular, it was of interest to compare the assessments of the experimenter's behavior made by observers varying in degree of familiarity with the language and culture of the psychological experimenter. Both the intragroup reliabilities and the predictive or correlational value of the ratings made by the different groups of judges were to be compared.

In connection with an earlier research program on the effects of the experimenter's expectancy on the responses obtained from his subjects, sound motion pictures were made of experimenters administering a photo rating task to each of several subjects (2). Each experimenter asked his subjects to judge the degree of success or failure shown by the persons pictured in a series of 10 photographs of faces. The subjects made their judgments on a rating scale that ranged from extreme success (+10) to extreme failure (-10) with intermediate labeled points. For some of their subjects, experi-

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² On leave from Keio University.

menters had been led to expect ratings of success (+5); for some they had been led to expect ratings of failure (—5); and for some subjects, they had been given no particular expectancy.

The instruction-reading portions of the films and sound tracks were analyzed for three male experimenters filmed in interaction with a total of 10 subjects, all but two of whom were females. From earlier analyses of these same interactions, all three of the experimenters selected were known to have obtained data in accordance with the expectancies they had been given (1).

B. METHOD

1. *Experimental Stimuli*

Ten tape-recorded voices obtained from the previously cited experiment (1) were used as one set of experimental stimuli. Each voice belonged to an American experimenter who was speaking to an American subject. These same 10 tape-recorded voices were then combined with the corresponding 10 filmed interactions as a second set of stimuli. The subject in each interaction was concealed from view by a card placed over part of the projector lens, with the following exception: at the beginning of each interaction, the subject was shown briefly, in order to make the raters aware that they were watching an interaction.

2. *Raters*

Twenty Japanese and nine Americans served as raters. They were (a) 10 Japanese (five males, five females) who had lived in America less than one year and could not understand English very well, (b) 10 Japanese (five males, five females) who had lived in America more than two years and could understand English very well, and (c) nine Americans (four males, five females) who had never been to Japan and could not understand Japanese at all. The average age of the Japanese raters was 32.7 (31.6 for females, 33.8 for males); the range was from 26 to 41 years of age. For Americans the average age was 31.3 (33.6 for females, 29.0 for males), and the range was from 25 to 40. Each rater earned \$10.00.

3. *Experimental Procedure*

Each rater served first as a rater of the tape-recorded voices, and then, one week later, as a rater of the voices synchronized (as much as possible) with the corresponding filmed interactions. Members of the three groups

were kept separate by scheduling them at three different hours, one hour for each group. Each stimulus was rated on 33 rating scales which ran from zero to 9. Raters were asked to make their judgments quite rapidly and were given an opportunity to make practice ratings on some additional interactions.

C. RESULTS AND DISCUSSION

1. Reliability

The mean interrater reliability correlation coefficient was computed for each of the 33 variables separately for the three groups. Table 1 shows for

TABLE 1
RANGES AND MEDIANS OF INTEROBSERVER RELIABILITIES FOR FOUR GROUPS OF OBSERVERS

Observer group	Reliability	Channel	
		Auditory	Visual + Auditory
Japanese (Nonfluent)	Highest	+ .58	+ .73
	Median	+ .21	+ .18
	Lowest	— .04	— .03
Japanese (Fluent)	Highest	+ .80	+ .80
	Median	+ .39	+ .30
	Lowest	+ .07	— .07
American (Present study)	Highest	+ .64	+ .55
	Median	+ .34	+ .24
	Lowest	— .01	— .03
American (Earlier study) ^a	Highest	+ .32	+ .50
	Median	+ .12	+ .28
	Lowest	— .10	— .12

^a See Rosenthal (2, p. 271).

each of these groups and for the auditory channel and the visual + auditory channel separately, the highest, lowest, and median of the 33 obtained mean correlations. Analogous results for an earlier study are shown at the bottom of the table for comparison purposes.³

A surprising result of this analysis of reliabilities was the uniform tendency for all three groups of judges of the present study to show slightly higher median reliabilities when judgments were based only on the auditory channel of information than when judgments were based on the auditory and visual

³ It should be noted, however, that in the earlier study different judges were employed to rate the auditory channel and the auditory + visual channel. Therefore, any differences between the reliabilities of the present study and those of the earlier study might well be due to the procedural differences more than to any sampling differences.

channels combined. We might well have expected just the reverse: namely, that interjudge reliability would be higher when more, rather than less, information was available as a basis for evaluation.

In both the auditory channel and in the visual + auditory channels combined, the Japanese observers more familiar with American speech and American society showed substantially higher median reliabilities than did the Japanese observers less familiar with American speech and American society. On the average, the former group's judgments accounted for about three times the proportion of variance (r^2) in one another's judgments than did the latter group's judgments. The American judges' median reliability tended to fall between the reliabilities of the two Japanese groups of judges.

Table 2 shows the mean interobserver reliability of the three groups (two Japanese groups and one American group) of judges' mean interobserver reliabilities. The magnitudes of the mean reliabilities of the auditory channel and the visual + auditory channels combined were quite comparable, though the auditory channel reliabilities were larger about 58% of the time. Examination of the reliabilities of some specific variables shows that in both channels the highest mean reliability was obtained for the variable "Speaks distinctly." Somehow, this was not surprising; distinctness of speech would seem to be an easy-to-agree-upon judgment. What was surprising was that the variable earning the next highest mean reliability in both channels of communication was the variable "Encouraging," which does not give the impression of having easy-to-agree-upon behavioral referents.⁴

2. *Experimenter Behavior*

For each of the 33 variables shown in Table 2 the mean rating assigned to each *E*'s behavior toward each *S* was calculated separately for the male and female judges of our three groups of judges. Thus, for each *E-S* interaction, in each of the two channels judged, six scores were available, one

⁴ There is a sense in which none of the entries of Table 2 looks like the kind of correlation coefficients we like to obtain as our reliability indices. The average coefficient of Table 2 is on the order of .3, while we tend to want reliabilities on the order of .7, or .8, or .9. What we must bear in mind, however, is that a mean interjudge reliability, while a useful index of what degree of agreement any two judges can expect to obtain, is not "effective reliability" of a variable defined as a mean of many judges' ratings. On intuitive grounds alone we might well imagine that for any given mean interjudge reliability, the more judges that are added the more we increase the "true score" component at the expense of the diminishing "error score" component. The mathematics of the situation supports our intuition, and we find the reliability of the mean of several judges' ratings to increase quickly as the number of judges increase (e.g., 5, p. 127). Thus, for example, given a mean interjudge reliability of .3, the reliabilities of the mean of 2, 5, 10, 20, and 30 judges are found to be .46, .68, .81, .90, and .93, respectively.

TABLE 2
MEAN INTEROBSERVER RELIABILITY FOR EACH OF 33 VARIABLES

Variable	Channel	
	Auditory	Visual + Auditory
1. Likeable	+.31	+.22
2. Active	+.16	+.14
3. Dominant	+.49**	+.36*
4. Honest	+.17	+.09
5. Friendly	+.26	+.38*
6. Personal	+.26	+.31
7. Talkative	+.17	+.07
8. Nervous	+.40*	+.30
9. Speaks loudly	+.11	+.25
10. Casual	+.14	+.21
11. Enthusiastic	+.42*	+.15
12. Interested	+.40*	+.16
13. Courteous	+.41*	+.12
14. Businesslike	+.21	+.15
15. Professional	+.37*	+.18
16. Pleasant voice	+.39*	+.51**
17. Fast speaking	+.43*	+.41*
18. Expressive voice	+.32	+.38*
19. Encouraging	+.47**	+.47**
20. Pleasant	+.32	+.36*
21. Speaks distinctly	+.67**	+.70**
22. Untrustworthy	+.08	+.14
23. Intelligent	+.24	+.20
24. Cold	+.13	+.10
25. Immature	+.30	+.39*
26. Melodic voice	+.36*	+.26
27. Shy	+.33*	+.27
28. Competent	+.27	+.26
29. Speaks fluently	+.20	+.29
30. Believable	+.20	+.19
31. Relaxed	+.30	+.26
32. Amateur	+.26	+.28
33. Moody	+.18	+.19

* Approximately $p \leq .05$, one-tail, $df = 24$.

** Approximately $p \leq .01$, one-tail, $df = 24$.

based on each group of observers. These scores were then correlated with each of the following four variables: (a) the ratings of the stimulus photos subsequently made by the *Ss*, (b) the level of expectancy induced in *E* for each *S* with +5 coded as +1, -5 coded as -1, and with no expectancy induced coded as 0, (c) the differential vocal emphasis given by *E* in his reading to his *Ss* of the response alternatives, such that a large positive number indicated that *E* had given much greater vocal emphasis to his reading of such response alternatives as "+5" or "success" than to such response alternatives as "-5" or "failure," (d) the induction of either a +5 or a -5 expectancy (coded as +1) compared to having been given no expectancy (coded as 0).

TABLE 3
MEDIAN CORRELATIONS OF SIX GROUPS OF OBSERVERS'
RATINGS OF EXPERIMENTER BEHAVIOR AND
SUBJECTS' SUBSEQUENT PHOTO RATINGS

Variable	Channel	
	Auditory	Visual + Auditory
Active	-.43*	-.01
Casual	-.19*	-.04
Expressive voice	-.31*	-.12
Encouraging	-.28*	-.07
Speaks distinctly	-.33	-.21*
Melodic voice	-.36*	-.19
Competent	-.24*	+.03

* All six groups of observers showed the same direction of correlation ($p = .03$, two-tail). In each column, approximately one such p might be expected to occur by chance.

Table 3 shows the median correlation of all six groups of observers' ratings with the subsequent ratings of photos made by *Ss*. Only those variables are listed that yielded correlations of the same sign from all six groups of observers for either of the two channels studied. Such agreement in direction of relationship can be expected to occur by chance only about once in each array of 33 median correlations and Table 3 shows that for the visual + auditory channels combined, only one such median correlation was obtained. Surprisingly, when less information was available (auditory channel), there were many more instances of perfect agreement in direction than could be expected to occur by chance. Ordinarily, we would not expect six such diverse groups of judges to agree on direction of relationship so much better when they had access to so much less information. Perhaps the addition of visual channel information served more to confuse or distract our heterogeneous groups of judges than to inform them.

The overall picture that emerges from Table 3 is that subjects tended to rate photos of others as being more unsuccessful when the instructions they heard were presented in a more active, encouraging, competent, and casual manner and when the quality of voice was judged more melodic, expressive, and perhaps as more distinct as well. These results are in partial agreement with the results of earlier work in the United States in which the more professional, higher status *Es* obtained ratings of photos from their *Ss* as depicting faces of more unsuccessful people (2, p. 78, 79, 296).

Table 4 shows the median correlation of all six groups of observers' ratings with the level of expectancy (+1, 0, -1) induced in *E*. Once again, many more variables in the auditory channel showed perfect agreement of direction among all six groups of judges than we would expect by chance or than we

TABLE 4
 MEDIAN CORRELATIONS OF SIX GROUPS OF OBSERVERS' RATINGS OF
 EXPERIMENTER BEHAVIOR AND TYPE OF EXPECTANCY
 GIVEN TO THE EXPERIMENTER

Variable	Channel	
	Auditory	Visual + Auditory
Dominant	-.14*	+.07
Nervous	+.20*	-.03
Businesslike	-.21*	-.16*
Speaks distinctly	-.09	-.13*
Intelligent	-.09*	-.10
Immature	+.21*	+.14
Speaks fluently	-.27*	-.06
Relaxed	-.06*	+.11

* All six groups of observers showed the same direction of correlation ($p = .03$, two-tail). In each column, approximately one such p might be expected to occur by chance.

found in the visual + auditory channels combined. None of the median correlations was very high, however, and though they could not be easily ascribed to chance, they did not account for much variance. The trends suggest, nevertheless, that when *Es* were assigned expectations for more positive photo ratings, they were judged in the auditory channel to behave in a more nervous and immature manner, and to be less fluent in speech, less businesslike, and less dominant.

Table 5 shows the median correlation of all six groups of observers' ratings with the differential vocal emphasis given by *E* in his reading to *S* of the response alternatives available to *S*. In both channels of communication many more variables showed perfect agreement in direction of relationship among all six groups of observers than we would expect by chance. Once again, perfect agreement occurred much more often in the auditory than in the visual + auditory channels, though in almost every case the direction of relationship of the median correlation was the same in the two channels.

Generally speaking, those *Es* who gave greater vocal emphasis to the "+5" or "success" response alternatives when compared to those *Es* who gave greater vocal emphasis to "-5" or "failure" response alternatives were judged to be less distinct and less pleasant in their speech, less intelligent, less enthusiastic, less competent, more shy, and more nervous when both channels of Table 5 were considered. When the auditory channel was considered alone, those *Es* giving greater vocal emphasis to "success" type response alternatives were also judged as less active, less likeable, less pleasant, less courteous, and less interested. These findings are of substantial magnitude and statistical significance, but they are by no means self-explanatory. Why

TABLE 5
 MEDIAN CORRELATIONS OF SIX GROUPS OF OBSERVERS' RATINGS OF
 EXPERIMENTER BEHAVIOR AND EXPERIMENTER'S DIFFERENTIAL
 VOCAL EMPHASIS IN READING RESPONSE ALTERNATIVES

Variable	Channel	
	Auditory	Visual + Auditory
Likeable	-.51*	-.07
Active	-.55*	-.22
Dominant	-.40*	-.16
Friendly	-.40*	-.03
Personal	-.21*	-.02
Nervous	+.16*	+.28*
Casual	-.19	-.13*
Enthusiastic	-.35*	-.20*
Interested	-.45*	-.22
Courteous	-.45*	+.08
Pleasant voice	-.45*	-.28*
Fast speaking	+.21*	+.47
Expressive voice	-.40*	-.24
Encouraging	-.41*	-.26
Pleasant	-.46*	-.14
Speaks distinctly	-.57*	-.44*
Intelligent	-.25*	-.34*
Cold	+.27*	+.10
Melodic voice	-.38*	-.25
Shy	+.32*	+.30*
Competent	-.31*	-.15*
Speaks fluently	-.45	-.29*
Amateur	+.13	+.27*
Moody	+.37*	+.10

* All six groups of observers showed the same direction of correlation ($p = .03$, two-tail). In each column, approximately one such p might be expected to occur by chance.

more likeable and more active sounding *Es* should be the ones to give greater vocal emphasis to the negative response alternatives of "-5" and "failure" remains a mystery at least for the present.

Table 6 shows the median correlation of all six groups of observers' ratings with the induction of either a +5 or -5 expectancy (coded as +1) as compared with having been given no expectancy (coded as 0). In both channels of communication shown in Table 6 the overwhelming majority of variables show perfect agreement among all six groups of observers in direction of relationship. This time, in addition, the auditory channel was not clearly superior in terms of the number of variables for which all six groups of judges agreed perfectly in direction of relationship. Because so many of the variables showed perfect agreement in one or both channels, the median correlations are shown for all 33 variables including the three variables that failed to find directional unanimity in either channel.

TABLE 6
MEDIAN CORRELATIONS OF SIX GROUPS OF OBSERVERS' RATINGS OF
EXPERIMENTER BEHAVIOR AND EXPERIMENTAL INDUCTION
OF AN EXPECTANCY

Variable	Channel	
	Auditory	Visual + Auditory
1. Likeable	-.46*	-.62*
2. Active	-.37*	-.39
3. Dominant	-.58*	-.62*
4. Honest	-.47	-.58
5. Friendly	-.40*	-.68*
6. Personal	-.50*	-.67*
7. Talkative	+.11	-.52
8. Nervous	+.61*	+.48*
9. Speaks loudly	-.40*	-.50*
10. Casual	-.20	-.51*
11. Enthusiastic	-.60*	-.46*
12. Interested	-.56*	-.56*
13. Courteous	-.56*	-.47*
14. Businesslike	+.27	+.34
15. Professional	-.69*	-.65*
16. Pleasant voice	-.44*	-.55*
17. Fast speaking	+.63*	+.43*
18. Expressive voice	-.41*	-.52*
19. Encouraging	-.52*	-.63*
20. Pleasant	-.43*	-.60*
21. Speaks distinctly	-.50*	-.56*
22. Untrustworthy	+.39	+.37*
23. Intelligent	-.60*	-.51
24. Cold	+.30	+.40*
25. Immature	+.53*	+.56*
26. Melodic voice	-.38	-.34*
27. Shy	+.56*	+.55*
28. Competent	-.63*	-.47*
29. Speaks fluently	-.31*	-.65
30. Believable	-.55*	-.59*
31. Relaxed	-.45*	-.57*
32. Amateur	+.68*	+.57*
33. Moody	+.47*	+.49*

* All six groups of observers showed the same direction of correlation ($p = .03$, two-tail). In each column, approximately one such p might be expected to occur by chance.

The effects on *Es*' behavior of having been given an expectancy for either a positive or a negative photo rating appear to be quite dramatic, not only in terms of agreement on direction of relationship, but also in terms of agreement between channels in directionality and in magnitude of median correlation. When *Es* were given either type of expectancy, their behavior in either channel of communication was judged to be less professional, less dominant, less believable, less intelligent, less distinct of speech, more shy, more amateurish, more immature, less interested, less personal, and less en-

couraging. These relationships, and the others shown in Table 6, lead one to believe that *Es* given an expectation, any expectation, behave less professionally and less personally, and in addition, show less integrity. The behavior of *E* appears, then, to be affected rather importantly by having been given an expectation of how his *Ss* should respond.

3. Differences in Observer Groups

In the just preceding section, we have focused on the similarities among the six groups of observers, particularly on the homogeneity of direction of the correlations of the groups' ratings of *E* behavior and certain other variables. In this section, our intent is to focus more on any nontrivial differences among the six groups of observers in magnitude of correlation between the various *E* behaviors and the other variables. Two of these latter, however, *Ss'* photo ratings and type of expectancy given to *E* (coded as +1, 0, -1) showed too few substantial correlations to make any analysis of group differences worthwhile. We shall consider only the differences among groups in correlations between *E* behavior and *E's* differential vocal emphasis and between *E* behavior and *E's* having been given a +5 or a -5 expectancy.

Inspection of the six groups' correlations showed that, on the average, female observers showed higher correlations than male observers between *E* behaviors and *E's* differential vocal emphasis when the observations were based on the auditory channel alone. The medians of the three groups of female observers are shown in the first column of Table 7, and, as we might expect, the direction and, to some extent, even the magnitude of the correlations are quite consistent with the first column of Table 5, though when correlations are based only on female judges' ratings, they tend to be higher in absolute magnitude. On the basis of judges of both sexes or on male judges alone, there were no median correlations as large as .60; but on the basis of female judges, there were four such correlations ranging from .60 to .68.

Whereas female judges showed the higher correlations between *E* behavior and differential vocal emphasis in the auditory channel, the male judges showed the higher correlations in the combined visual and auditory modes. The medians of the three groups of male observers are shown in the second column of Table 7, and these results were quite similar to those found in the second column of Table 5. Just as in Table 5, the correlations based on the visual + auditory channel tended to be smaller in magnitude and less often significant statistically than the correlations based on the auditory channel alone.

Of the six groups of observers, one emerged as showing more large cor-

TABLE 7
CORRELATIONS OF OPTIMAL GROUPS OF OBSERVERS' RATINGS OF
EXPERIMENTER BEHAVIOR AND EXPERIMENTER'S DIFFERENTIAL
VOCAL EMPHASIS IN READING RESPONSE ALTERNATIVES

Variable	All females ^a	Observer group	
		All males ^b	Japanese males ^c
Likeable	-.60**	+.18	-.46
Active	-.68**	-.14	-.62
Dominant	-.52**	-.15	-.58
Honest	-.30	+.03	-.67*
Friendly	-.45*	-.08	-.32
Talkative	-.51**	-.01	-.06
Enthusiastic	-.42*	-.25	-.73*
Interested	-.45*	-.33	-.72*
Courteous	-.53**	+.02	-.51
Pleasant voice	-.42*	-.27	-.50
Fast speaking	+.24	+.47*	+.42
Pleasant	-.44*	+.02	-.40
Speaks distinctly	-.62**	-.46*	-.46
Untrustworthy	+.06	+.46*	+.65*
Intelligent	-.31	-.39*	-.68*
Shy	+.46*	+.30	+.21
Speaks fluently	-.63**	-.23	-.23
Moody	+.40*	+.12	+.12

^a Median of three groups of female observers of auditory channel.

^b Median of three groups of male observers of visual + auditory channel.

^c Visual + auditory channel correlations by Japanese males speaking English fluently.

* Approximately, $p \leq .05$, $df = 24$ for columns a and b, $df = 8$ for column c.

** Approximately, $p \leq .01$, $df = 24$.

relations between *E* behavior and *E*'s differential vocal emphasis than all other groups combined in the visual + auditory channel. The Japanese males who spoke English more fluently made ratings that correlated .65 or higher with *E*'s differential vocal emphasis for five different variables, while only one correlation that high was obtained by all five other groups combined. The third column of Table 7 shows these five large correlations and any other correlations for variables in which either of the first two columns had a statistically significant entry. The conclusions one would draw about the behavior of those *Es* who showed greater vocal emphasis on "success" related response alternatives would be quite similar, in general, no matter which group of judges shown in Table 7 we employed, but we would do best to achieve high correlations if we employed female judges to rate the auditory channel and Japanese males who understood English well to rate the visual + auditory channel.

The results described may be due in part to a differential sensitivity of males and females to the different channels of communication, and it seems

to be of some potential importance to conduct further research on communication patterns as a function of sex of sender, sex of receiver, and type of communication channel (3, p. 359). Further research is also indicated to help us determine why the Japanese males who speak and understand English well should have been so outstanding at obtaining high correlations between their ratings of *Es*' behavior based on visual + auditory information and *E*'s differential vocal emphasis. Perhaps their cultural differences provide a helpful and objectifying distance or perspective on what they see and hear, while their competence with English permits them to assess the situation more clearly than if they were less skilled in their use of English.

Inspection of the six groups' correlations showed that whether *E* had been given either of the two expectancies as contrasted with not having been given any expectancy best predicted subsequent behavior when that behavior was judged in the auditory channel by the less fluent Japanese males or in the visual + auditory channel by American males. In the case of the auditory channel 45% of the 51 significant ($p \leq .05$) correlations were obtained by the less fluent Japanese males. In the case of the visual + auditory channel, 44% of the 54 significant ($p \leq .05$) correlations were obtained by the American males. In both cases only about 17% of the significant correlations should have been obtained by each of these two groups, and in both cases there were no close runner-up groups of judges (16% and 22%, respectively).

Table 8 shows the correlations for all 33 variables for the two channels as judged by the best predicting group of judges. The results are in good agreement with those of Table 6; within each channel, 97% of the correlations are in the same direction in the two tables, and the two columns of Table 8 agree in sign 91% of the time. The general conclusions drawn earlier from an analysis of Table 6 are simply more dramatically supported by Table 8.

D. CONCLUSIONS

The most important result of the present study was to show the great variety of unprogrammed behaviors emitted by a psychological experimenter as he conducts his psychological research and how variations in these unintended behaviors may be associated with *E*'s expectations, *E*'s instruction reading behavior, and with *Ss*' subsequent responses. Thus, when *E*'s behavior was judged in the auditory channel as more active, encouraging, competent, and casual, and when his voice was heard as more melodic and expres-

TABLE 3
CORRELATIONS OF OPTIMAL GROUPS OF OBSERVERS' RATINGS OF
EXPERIMENTER BEHAVIOR AND EXPERIMENTAL INDUCTION
OF AN EXPECTANCY

Variable	Channel	
	Auditory ^a	Visual + Auditory ^b
1. Likeable	-.82**	-.74*
2. Active	-.65*	-.80**
3. Dominant	-.77**	-.83**
4. Honest	-.70*	-.90**
5. Friendly	-.83**	-.83**
6. Personal	-.77**	-.66*
7. Talkative	+.33	-.73*
8. Nervous	+.54	+.49
9. Speaks loudly	-.41	-.79**
10. Casual	+.46	-.62
11. Enthusiastic	-.78**	-.68*
12. Interested	-.80**	-.82**
13. Courteous	-.68*	-.83**
14. Businesslike	+.48	-.81**
15. Professional	-.82**	-.84**
16. Pleasant voice	-.78**	-.72*
17. Fast speaking	+.66*	+.37
18. Expressive voice	-.81**	-.62
19. Encouraging	-.72*	-.72*
20. Pleasant	-.86**	-.80**
21. Speaks distinctly	-.72*	-.68*
22. Untrustworthy	+.82**	+.41
23. Intelligent	-.76*	-.64*
24. Cold	+.62	+.46
25. Immature	+.52	+.68*
26. Melodic voice	-.73*	-.54
27. Shy	+.64*	+.63
28. Competent	-.80**	-.72*
29. Speaks fluently	-.29	-.81**
30. Believable	-.78**	-.93**
31. Relaxed	-.04	-.68*
32. Amateur	+.70*	+.71*
33. Moody	+.57	+.63

^a Ratings made by Japanese males, nonfluent in English.

^b Ratings made by American males.

* $p \leq .05$, $df = 8$.

** $p \leq .01$, $df = 8$.

sive, then *E*'s *S*s were more likely subsequently to judge photos of others as being of more unsuccessful people.

When *E*s had been assigned expectations for more positive photo ratings, they were judged from the auditory channel to behave in a more nervous and immature manner and to be less fluent in speech, less businesslike, and less dominant.

When *E*s had given greater vocal emphasis to "success" than to "failure"

references in their reading of response alternatives, they were judged as less distinct and less pleasant in speech, less intelligent, less enthusiastic, less competent, more shy, and more nervous in both the visual + auditory channel and in the auditory channel alone.

When *Es* had been assigned expectations either for "success" or for "failure" responses as compared to having been given no expectancy, their behavior was judged as less professional, less dominant, less believable, less intelligent, less distinct in speech, more shy, more amateurish, and more immature, less interested, less personal, and less encouraging, in both the visual + auditory channel and in the auditory channel alone. In short, *Es* given an expectation or hypothesis, any hypothesis, tended to behave in a less professional, less personable manner and, in addition, were seen as showing less integrity. These, it should be emphasized, were the effects on behavior of having been given an expectancy; they were not the behaviors of *Es* who were more likely to obtain the expected response from their *Ss*. In fact, it has been shown elsewhere that more professional, more dominant *Es* are more likely to obtain from their *Ss* the responses they have been led to expect (2, 4).

When the auditory channel alone was compared to the visual + auditory channel, the surprising outcome was a general superiority of the auditory channel alone. Despite there being less information in this channel than in the combined channel, the auditory channel tended to yield higher interjudge reliabilities and to be a better source of information for "predicting" (a) *Ss'* photo ratings from *E's* behavior, (b) the level of expectancy induced in *E* from *E's* behavior, and (c) *E's* differential vocal emphasis from *E's* behavior.

When behavior showing significant correlations with differential vocal emphasis was considered, females tended to be better judges than males when the auditory channel was considered, but males tended to be better judges when the visual + auditory channel was considered. These findings, along with related findings reported earlier (3), suggest that there may be a differential sensitivity to and preference for different communication channels among males and females.

When behavior showing significant correlations with whether or not *E* had been given any expectancy at all was considered, two groups of judges were outstanding. When behavior was judged from the visual + auditory channel, American male judges were particularly effective, perhaps because it was American male *Es* that were being watched and listened to. When behavior was judged from the auditory channel alone, it was the less fluent Japanese male judges who were the most effective judges. Perhaps these judges, not understanding English so well, were less bored by having to listen

to the same instructions being read over and over and remained, therefore, more attentive to differences in tone of voice. This same reasoning should apply also to female judges of the less fluent Japanese group, and indeed, that group was the second best group of auditory channel judges. Interestingly, the specific patterns of judgments made by the two outstanding groups were very similar to each other. Japanese males who spoke and understood English less well extracted from the auditory channel much the same type of information as American males did in the visual + auditory channel.

E. SUMMARY

Six groups of observers rated the behavior of three experimenters interacting with a total of 10 research subjects. Each group of judges (male and female Americans, male and female Japanese who spoke and understood English quite well, and male and female Japanese who spoke and understood English less well) evaluated *Es*' behavior on the basis of the auditory channel alone and also on the basis of the combination of the auditory and visual channel. Experimenters were found to engage in a variety of unprogrammed behaviors which were significantly related to (a) their *Ss*' subsequent responses, (b) *E*'s differential vocal emphasis as he read his response alternatives to his *Ss*, and (c) both the particular expectancy induced in *E* and whether any expectancy at all had been induced in *E*.

For the purpose of predicting differential vocal emphasis, female judges were better than male judges when rating from the auditory channel alone, but male judges were better than female judges when rating from the visual and auditory channel combined. For the purpose of predicting whether *E* had been given any expectancy for *Ss*' responses, American male judges were most effective when rating the visual and auditory channel combined, but when the auditory channel alone was employed, it was the Japanese males who were less familiar with English whose predictive performance was most effective. Each of these two groups of judges appeared to extract very much the same type of information, but each from its own preferred channel of communication.

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Harvard University

William James Hall

Cambridge, Massachusetts 02138

LOCUS OF CONTROL AND EXPERTISE RELEVANCE AS DETERMINANTS OF CHANGES IN OPINION ABOUT STUDENT ACTIVISM*¹

Department of Psychology, University of Maine

RICHARD M. RYCKMAN, WILLIAM C. RODDA, AND MARTIN F. SHERMAN

A. INTRODUCTION

According to Rotter (7), individuals acquire generalized tendencies to perceive reinforcing events as contingent upon their behavior or as being controlled by forces outside of themselves. Internally oriented people tend to believe that reinforcements are subject to their own control and occur as a result of displaying their skills or abilities. Externals, in contrast, typically perceive these reinforcing events as being determined by fate, luck, chance, or powerful others. A series of studies has indicated that, in general, American college students with internal orientations conform less than externals on tasks that are perceived as skill determined (1, 2, 4, 5, 8). Furthermore, these studies also suggest that internals are more discriminating in their reactions to influence than externals. Internally oriented subjects were found to resist strongly subtle attempts at manipulation, but to yield more when the influence attempts were overt. For externals, it did not matter whether the influence attempts were subtle or overt. They conformed more under both overt or covert conditions than they did in a control condition where no influence was attempted.

This latter finding led Ritchie and Phares (6) to raise the interesting question of whether externals were uniformly susceptible to influence in *all* situations. To investigate this possibility, they studied changes in opinion about national budget expenditures for internals and externals after they were subjected to a persuasive communication from a high and low prestige source. Their results indicated that externals were not uniformly susceptible to influence. Externals changed their opinions more in response to a high prestige than to a low prestige source and also changed more than internals when both received a message from a high prestige source. Presumably, externals perceived that a high prestige source represented an agent who had more con-

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trol over their reinforcements than a source low in power or prestige. Alternatively, externals may have simply valued agreement with a high prestige communicator than a source low in prestige.

In any event, this strong reliance on a high prestige source provides the basis for the current investigation. While externals may be capable of reacting differentially to influence attempts by high and low prestige sources, they may be incapable of making discerning judgments about key characteristics of high prestige sources which would help to provide the basis for rational decisions on given issues. In particular, it was hypothesized that externals would tend to accept influence to the same degree from a high prestige source whose expertise was relevant as from an expert whose knowledge was irrelevant to the issue under consideration. Internals were expected to be less reliant on a high prestige source for their reinforcements and, consequently, to be more discerning in their judgments regarding the abilities of a reputed expert. Thus, they were expected to be more willing to accept influence from a source with relevant as compared to irrelevant expertise. This latter prediction is also based upon Rotter's contention that internals conform more than externals in situations where it is to their advantage to do so. It is anticipated that internals will perceive the advantage of accepting influence from a source with relevant expertise on an issue than from one with irrelevant expertise, if they are to arrive at a more accurate appraisal of their viewpoints.

B. METHOD

In order to assess the amount of influence exerted by a high prestige source with relevant or irrelevant expertise, opinions were measured by using parallel forms which yielded scores before and after the attempted influence. In contrast to the Ritchie and Phares study which used a low-involvement issue to assess opinion change, the current investigation used a highly salient and ego-involving issue—i.e., student activism—in an effort to determine whether changes could still be obtained on an issue of considerable concern to students.

1. *Subjects and Materials*

Two hundred and eight undergraduates in an introductory psychology class at the University of Maine completed a battery of personality tests during a class session at the beginning of the fall semester. The I-E Scale (7) and Form A of the Gold-Ryckman Student Activism Scale (3) were included in the test battery. Items from Form B of the activism measure were used as task stimuli.

The I-E Scale contained 29 forced-choice items, including six fillers. It yields scores, ranging from zero to 23, that reflect individual differences in expectancies about the relationship between behavior and reinforcement. The higher the score on the scale, the greater the externality of the subject. Internals and externals were selected from the upper and lower thirds of the distribution. Internal scores ranged from zero to 8, while external scores ranged from 13 to 20. Of these subjects, only 30 internals and 30 externals with scores that fell below the mean on Form A of the student activism scale ($M = 56$) were retained. These subjects were then randomly assigned by locus of control orientation to the relevant, irrelevant, and control conditions.

Forms A and B of the student activism measure contained 18 items apiece, with each statement using a five-point Likert-type format. Scores on each form could range from 18 to 90, with high scores indicating favorable opinions about student activism. The Pearson Product-Moment correlation coefficient between the forms was .93 ($N = 66$). Examples of some of the positively and negatively worded items used were (a) The peace movement on campus today is concerned with the betterment of human living; (b) The evils of our society are such that truly aware students have no choice but to protest; (c) Student radicals lack discipline, purpose, and values; and (d) Student protesters do not offer any solutions to our problems.

2. *Experimental Design*

The experimental design was a 2×3 factorial, using locus of control (Internal-External) and expertise relevance (Relevant-Irrelevant-Control) as the primary variables. The dependent variable was the amount of opinion change on the items of Form B of the activism measure, using Form A scores as a control variable. There were 10 subjects in each of the six conditions.

3. *Procedure*

Subjects reported to the laboratory alone to participate in research which was concerned with studying the opinions of faculty, students, and administrators about student activism. They were met by the experimenter and an advanced graduate student posing as a faculty member from a department on campus.² The "faculty" member was introduced in the following manner:

We are pleased that you and Dr. Rodda, a member of the History Department, could participate.

² Subjects in the control condition were met by the experimenter only and asked to make their judgments about the activism issue independently, without the faculty member ever being present.

For expertise relevant group:

As you might know, Dr. Rodda has been faculty advisor to the SDS chapter here on campus and has studied the problems of activism in his own research for the last three years.

For expertise irrelevant group:

As you might know, Dr. Rodda has focused in his own research on social problems in the ancient Chinese Ming Dynasty for the last three years.

After these remarks, both the subject and the faculty member were asked to be seated across from each other in front of panels of signal lights. Each panel consisted of five columns of lights labeled from "strongly agree" to "strongly disagree" and two rows labeled "Person A" and "Person B." The task required subjects to respond to a series of 18 items about student activism by pressing the appropriate column buttons on their panels after each item was projected on an overhead screen for six seconds. The experimenter asked the participants to respond in order so that he would have sufficient time to record their judgments as they appeared on his own panel. The faculty member (Person A) was asked to respond first and the subject (Person B) was asked to make his judgment only after seeing Person A's judgment. In the interest of realism, the faculty member adopted a position favorable to student activism, but one which varied randomly from item to item in its extremity. His responses were slightly favorable to activism for five out of the 18 items and extremely favorable on 10 items. For three items, he adopted a neutral stance. All subjects were also required to record their own judgments and the judgments of the other participant on a form provided for them. After the subjects had made all of their judgments, they responded to a brief post-session questionnaire and were cautioned not to reveal anything about the experiment to their classmates. They were assured that the experiment would be discussed fully by their instructor toward the end of the semester. At that time the purpose of the experiment was explained to all of the students in the class, and an attempt was made to answer all of their questions.

C. RESULTS

The initial attitude scores were subjected to an analysis of variance in order to determine whether there had been significant differences in opinion about student activism between the various treatment conditions. The main effect for locus of control was significant ($F = 6.22, df = 1, 54, p < .025$), indicating that internals were more unfavorable toward student activism than

externals initially. There were no differences between the expertise or control groups. To control statistically for these initial locus of control differences, however, the Form B activism scores were subjected to an analysis of covariance, with Form A scores as a covariate. In a summary of this analysis, the main effect for expertise relevance was highly significant ($F = 8.94$, $df = 2, 53$, $p < .0001$). Subjects subjected to influence from the high prestige source showed much more opinion change than did the controls. This main effect, however, is conditioned by a significant interaction between locus of control and expertise relevance ($F = 4.50$, $df = 2, 53$, $p < .025$). As expected, externals accepted influence equally from a high prestige source whose expertise was relevant and from one whose expertise was irrelevant ($t = 1.28$, $df = 53$, n.s.). Additionally, externals in the relevant expertise ($t = 3.22$, $df = 53$, $p < .001$) and irrelevant expertise conditions ($t = 4.50$, $df = 53$, $p < .001$) had higher scores than the external control subjects. Contrary to prediction, internals were no more influenced by the relevant than by the irrelevant expertise of the source ($t < 1$, $df = 53$, n.s.). For the internal subjects, neither the relevant ($t < 1$, $df = 53$, n.s.) nor the irrelevant conditions ($t < 1$, $df = 53$, n.s.) produced significant differences from the controls. Table 1 presents the unadjusted means between Forms A and B and the means of the adjusted final activism scores.

TABLE 1
MEANS OF ADJUSTED FINAL STUDENT ACTIVISM SCALE AND OF UNADJUSTED DIFFERENCES BETWEEN FORMS A AND B

Locus of control	Expertise conditions		
	Relevant	Irrelevant	Control
Internals	64.8 (39.3-62.7)*	63.9 (44.3-65.0)	63.7 (38.4-61.1)
Externals	65.8 (42.3-65.6)	68.1 (45.3-69.8)	60.0 (46.0-62.2)

* Unadjusted means for Forms A and B.

All subjects also responded to three eight-point graphic rating items. These items asked the subjects to indicate their degree of concern with their performances, their confidence in their judgments, and how much they enjoyed participating in the experiment. Analyses of variance for these data indicated no significant differences between the various experimental groups. In terms of the overall means on the eight-point scales, subjects seemed to find the experiment enjoyable, 6.1; were quite concerned, 6.1, about their performances; and confident, 5.8, of their judgments.

Although virtually all of the subjects perceived the study as an attempt to modify their attitudes on the activism issue, none of them was aware of its specific purposes.

D. DISCUSSION

This investigation provides support for the major hypothesis that externally oriented subjects tend to accept influence from a high prestige source, regardless of whether his expertise is relevant or irrelevant to the issue under consideration. Confirmation of the prediction suggests that their strong reliance on high prestige sources for reinforcement may prevent them from making appropriate discriminations about key characteristics of these sources which could result in harmful or inefficient decisions to themselves or others.

The secondary hypothesis, which stated that internals would yield more to a high prestige source with relevant than with irrelevant expertise, was not confirmed, however. Instead, internals showed no more conformity in either the relevant or irrelevant conditions than the control subjects. Although there was an attempt to disguise the fact that the experiment was concerned with opinion change, virtually all of the subjects perceived it as one involving influence attempts from a high prestige source. As indicated by the research efforts mentioned earlier, internals may be especially sensitive to subtle cues to manipulate their behavior and may, therefore, have resisted strongly the influence attempts.

Alternatively, the fact that the high prestige source with relevant expertise was also described as an advisor to SDS on campus may have created considerable resentment toward him. If he was actually perceived as a negative source, then it is possible that this consideration led to a rejection of his influence attempts by the internally oriented subjects. This explanation could be applied to the behavior of the externals as well, although they were still influenced to a considerable degree by him as compared to the control subjects. If this argument is valid, then deletion of the reference to the SDS advisor role in the relevant condition for the high prestige source should result in higher levels of opinion change for both internals and externals. To check this possibility, additional groups of internals and externals were tested under a condition that made no reference to the SDS advisor role. Subjects were simply informed that the faculty member had studied the problems of activism in his own research for the last three years. Contrary to expectation, internal subjects in the modified condition were even *less* influenced than internals in the original relevance condition ($t = 2.93$, $df = 18$, $p < .01$) and in the control condition ($t = 2.60$, $df = 18$, $p < .02$). Under this new condition, internals tended actively to reject influence at-

tempts made by a faculty member who was perceived as conducting research in the area of student activism. The data for the externals, however, indicated no change under the modified condition when compared to the original condition.

In regard to the behavior of the internals, the unexpected finding might be explained by a closer examination of the assumed relevance of the expert's knowledge to the issue under consideration. It is quite possible that the internally oriented subjects tended to perceive the faculty member conducting research in the area of students activism as a person whose knowledge was "irrelevant" to the issue. Perhaps he was seen as an ivory-tower figure who was actually removed from the important problems that confront students. Consequently, they tended actively to reject his influence attempts. This argument could also be extended to account for the added influence the faculty member commanded when he was introduced as an advisor to SDS *and* as a researcher in the activism area. Although the antiactivist internals may have disagreed strongly with the goals and philosophy of SDS students, a faculty advisor to that organization may have been perceived as a person who, through extended contact with such students, had at least some personal experience with the problem, in accordance with the current student *Zeitgeist*. Rank order data collected from 28 students in another introductory class provided some support for this latter argument. Both pro- and anti-activist students with internal and external orientations tended to perceive a history professor who was an advisor to SDS *and* who had studied the problems of activism in his own research as the source with the most relevant expertise on the subject, followed by a faculty researcher in the area, and as least relevant, a faculty member who had studied social problems in the ancient Chinese Ming Dynasty ($X^2 = 32.64$, $df = 1$, $p < .001$).

Finally, both of the foregoing interpretations could be subjected to more direct test in future research efforts. These investigations would provide a more complete and accurate understanding of the conditions under which internals and externals tend to accept or reject influence attempts by others. Such information would have considerable practical significance for a myriad of individuals engaged in the mass communication process, including educators, advertising personnel in business and industry, and government and military public information personnel.

E. SUMMARY

The effects of differences in locus of control and expertise relevance on changes in opinion about student activism were examined in a social influence situation. Internals and externals were subjected to influence from a high

prestige source who had either relevant or irrelevant expertise concerning student activism. The results indicated that externals tended to accept influence from a high prestige source, regardless of the relevance or irrelevance of his expertise on the issue. Contrary to expectation, however, internals did not yield more to a source with relevant as compared to irrelevant expertise. Interpretations of this latter finding consisted of a consideration of the definitional ambiguity of the expertise relevance manipulation and the possibility that internals resented covert attempts to influence them and actively resisted these efforts.

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Department of Psychology
University of Maine
Orono, Maine 04473

SOME PARAMETERS IN THE PERCEPTION OF GAZE*

Boston University

A. GEORGE GITTER, DAVID MOSTOFSKY, AND MICHAEL GUICHARD¹

A. INTRODUCTION

The act of looking can be treated as a source of stimulation as well as a type of response. The eyes not only look, but are looked at (7, p. 386).

If the eyes of the "looker" are to communicate, the observer must first ascertain the direction of his gaze: i.e., toward what object are the eyes pointing? The observer must then attempt to discover whether the looker is aware of the object, or whether in fact he is simply staring blankly at it, with his mind "a million miles away." Once convinced that the looker has focused his attention on the object, the observer may then evaluate the intricate play of expressions that pass across the looker's face, to determine added understanding of the relationship between the looker and the object of his gaze.

Consider, for example, the housewife whose gaze is directed toward a mouse scampering across her kitchen floor. There is little doubt she is aware of the object and the relationship she bears toward it is apparent. But if the observed object is another *person*, with eyes that express thoughts and feelings of his own, the situation is markedly different. Unlike the task of evaluating a person looking at a nonsocial object, the observation of interpersonal interaction requires the observer to evaluate two directions of gaze, two focuses of gaze, and two facial expressive displays. Admittedly, cultural determinants may well differ markedly. This study was designed to examine the direction of gaze, the focus of gaze, and the emotive expression of the first "looker" or first person (1P), in the presence of a second "looker" or second person (2P), as perceived by observer *S*. All *Ss* were American.

There is but sparse empirical research relating to the perception of gaze (2, 11). Some attempts with *infrahumans* (10) and the more common studies that examined the experimental social variables of person perception (1, 4, 5, 6, 7, 8) suggest confirmation of Heider's assertion that "... the

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¹ The assistance of Dr. Marvin Cline of the School of Education in making available stimuli material is gratefully acknowledged.

direction of a glance may provide a strong hint as to what the person is thinking, feeling, and wishing" (9, p. 43). In particular, variations in the horizontal-vertical orientation seemed most contributory to the accuracy of an observer's judgment (3, 8).

This study focused on investigating two aspects of visual interaction. First, it studied whether presence of 2P influenced perceived direction of gaze, focus of gaze, and expression of emotion in 1P. Second, it examined whether, in a 2P situation, the perceived focus of gaze and expression of emotion were influenced by the *S*'s perceiving or not perceiving 2P as looking at 1P.

B. METHOD

The sample comprised 200 volunteer Boston University undergraduate *Ss*. Each *S* was asked to participate in a short visual perception experiment.

1. *Apparatus and Stimulus Materials*

Ten black-and-white photographs were selected from an original set of 18 black-and-white photographs used in a similar study (8). The photographs depicted portrait-type torso shots of two white females in their early twenties. They were photographed together against a featureless background, and appeared to be approximately three feet apart. One girl (1P) wore a dark sweater, while the other (2P) wore a light one. First looker (1P) was a few inches taller than 2P. The photographs depicted different directions of gaze for each girl, as well as various combinations of directions of gaze for both girls.

For the 10 photographs, (*a*) the eyes of 1P were pointing in the same direction as the orientation of the head, (*b*) both 1P and 2P were looking at points along the horizontal plane (not looking "upward" or "downward"), (*c*) the faces of both 1P and 2P were relatively blank and emotionless. Figure 1 is a schematic diagram indicating the head and eye positions for both 1P and 2P in each photograph.

A second set of prints was made from the 10 photographs for use with a second treatment group (1P) in which the 1P stimuli alone were shown.

Additional apparatus included a response board, a response card, and a three-item questionnaire. The response board served as a measuring instrument for the *S*'s judgments of the direction of gaze. A cardboard cutout in the center of a circle, resembling an overhead view of a human head could be turned to point at any one of 36 numbers—zero to 35—marked off at 10 degree intervals on the perimeter of the circle. The response card was utilized to aid *Ss* in evaluating 1P's expression of emotion. Words contained on the

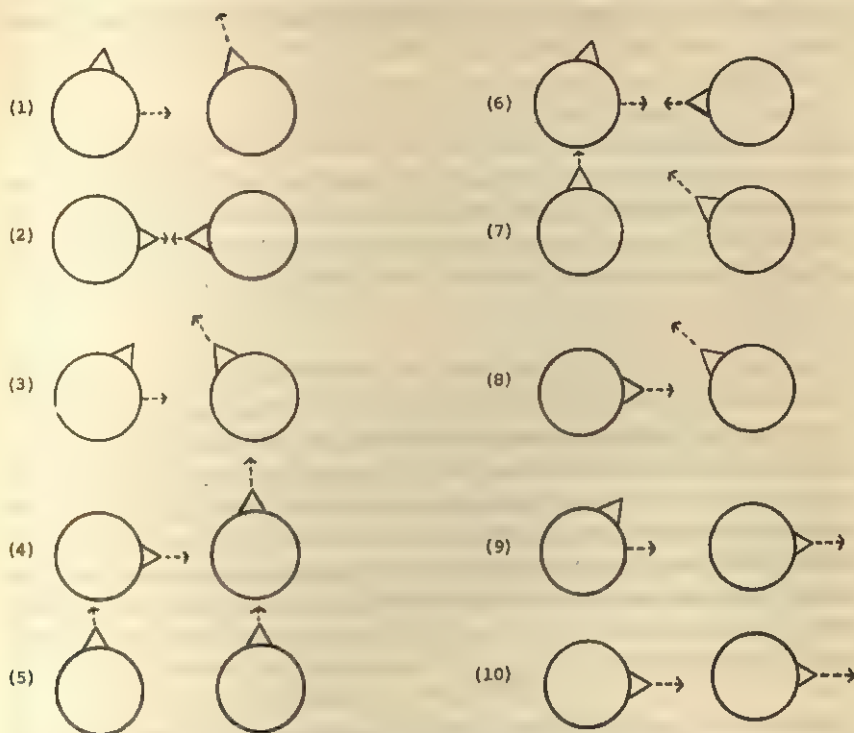


FIGURE 1

SCHEMATIC OVERHEAD VIEW OF THE 10 STIMULI

Triangle depicts nose of the girl (i.e., direction in which head is pointing) and arrow designates gaze (i.e., direction in which eyes are pointing). Note that head and eye direction are the same in 1P stimuli. The same stimuli were used in the second treatment group except that 2P photographs were absent.

card were 1. happiness, 2. surprise, 3. disgust, 4. sadness, 5. other, 6. She is showing no emotion; her face is blank.

2. Procedure

The 200 *Ss* were randomly assigned to one of two treatment groups, the 1P treatment group ($N = 100$) and the 2P treatment group ($N = 100$). Each *S* was tested individually. He was led into a small office where he was seated opposite *E* with the response board between them. Each *S* was presented with only one photograph at a time and asked to evaluate the 1P's (a) direction of gaze, (b) focus of gaze, and (c) type of emotion expressed.

Ss for the 2P treatment group were asked in addition if 2P was looking at 1P.

Ss in the 1P treatment group were shown a photograph of a girl in which the head was oriented and *S* was asked to indicate the corresponding direction of her eyes.

The instructions given the Ss in the 2P treatment group were slightly different inasmuch as the photograph depicted both a 1P and a 2P model.

It should be stressed that the photographs in the 1P treatment group were identical to those of the 2P treatment group with the exception of the presence or absence of 2P.

C. RESULTS AND DISCUSSION

Three independent analyses of the data were performed. First, 1P and 2P treatment groups were compared in terms of perceived direction of gaze, focus of gaze, and expression of emotion. Second, the 2P treatment group was dichotomized, and the Ss, who perceived 2P as looking at 1P, were compared to those who perceived 2P as not looking at 1P, in terms of perceived focus of gaze, and expression of emotion. Third, male Ss from both treatment groups were compared to their female counterparts in terms of their perception of emotion on 1P's face.

1. Direction of Gaze

There were significant differences between the 1P and 2P treatment groups ($t = 1.88$, $df = 1/198$, $p < .025$, one-tail) in the perceived direction of 1P's gaze. Specifically, the 2P treatment group Ss perceived the glance of 1P as more displaced toward 2P. In other words, the consistent effect of the presence of another person on the first person's observed direction of gaze has been shown by a persistent shift in the line of regard toward 2P, relative to the direction of gaze when 2P is absent. Additionally, a constricted response variability occurred when 2P was present, in contrast to when she was absent. The difference in variability between the two treatment groups was significant ($F = 5.528$, $p < .001$).

These findings seem to indicate that the presence of a second looker may spatially define and delimit an observed person's eyes as a stimulus of perception, especially with regard to the direction of his gaze. This would seem to suggest that when one sees two persons spatially close to each other, they appear to the observer as socially interacting with each other and that the observed shift in the line of regard represents a nonverbal cue characteristic

of such interaction. One hastens to add the constraint that such an inference can be validly posited for the cultural sample used in this study.

2. Focus of Gaze

Results of the comparison between 1P and 2P treatment groups indicated a significant difference ($t = 2.38$, $df = 1/198$, $p < .01$, two-tail) in terms of perceived focus of gaze. Ss in the 2P treatment group, as compared to their 1P treatment group counterparts, perceived more focus in 1P's gaze. Evidently, the presence of a second person influenced the observer to perceive the first person as noting the presence of the second person in his environment by focusing his gaze upon it.

3. Expression of Emotion

Emotion on the face of 1P was perceived more frequently ($t = 1.48$, $df = 1/198$, $p < .05$, one-tail) when 2P was present (2P treatment group Ss) as compared to when 1P was presented alone (1P treatment group Ss). These results confirmed the hypothesis that the presence of 2P elicited a more frequent perception of emotion in the face of 1P. Presumably, when two people appeared together, even if they did not look at each other, they provided the conditions of an affective relationship. Regardless of the *type* of feelings they may have harbored about each other, they were evidently perceived to have *some* feeling toward each other.

Some caution in the interpretation in these findings may be warranted, since only a small percentage of the Ss in either of the two treatment groups actually reported seeing any emotion being expressed, with most of the Ss designating the observed emotion as "Other," rather than one of the listed alternatives.

4. Focus of Gaze When 2P Looks at 1P

With only Ss from the 2P treatment group, no significant difference was found in perceived focus of gaze between those who perceived 2P as looking at 1P and those who perceived 2P as not looking at 1P.

This absence of difference in terms of perceived focus of gaze in 1P may, in part, be explained by the earlier findings that the *presence* of a social object, like 2P, influenced the Ss to perceive 1P as focusing his gaze on that object. Apparently, whether 2P was perceived as *looking* at, or not looking at 1P, was not critical; the mere presence of 2P may have been sufficient for the Ss to perceive 1P's gaze as focused. Of the 100 Ss in the 2P treatment

group responding to the question "Was 2P looking at 1P?" 58 replied in the affirmative.

5. *Emotion Being Expressed When 2P Looks at 1P*

Visual interaction constitutes an observed relationship between the persons perceived, providing the basis of emotive expression. Since the looking behavior of 2P could be considered an indicator of social interaction between 2P and 1P, less of such interaction would be expected when 2P was not looking at 1P. Thus, it was predicted that social interaction would be inferred whenever 2P was perceived as looking at 1P. The empirical results not only failed to support this prediction but, in fact, suggested the opposite.

Although the degree of perception of emotion on 1P's face differed when one compared the responses of the 1P treatment group Ss to those in the 2P treatment group, it was the 1P treatment group Ss who perceived emotion more frequently on 1P's face. The difference, however, was only marginally significant ($t = 1.75$, $df = 98$, $.10 > p > .05$, two-tail).

The finding that when 2P was perceived as *not* looking at 1P, 1P was perceived as expressing *more* emotion, need not necessarily be considered paradoxical. *Not looking* may be interpreted as *looking away from*; and *not looking* thereby constitutes an example of another mode of social interaction. If 2P was seen as ignoring or purposely avoiding 1P, Ss may have indeed "read into" 1P's expression some emotive content.

6. *Sex Differences*

The results supported the prediction that women would tend to perceive more emotion in the 1P than would men. Among the 200 Ss in the two treatment groups, the 83 women perceived emotion more often than did men ($t = 1.49$, $df = 198$, $p < .05$, one-tail).

D. SUMMARY AND CONCLUSIONS

The overall results highlight several findings concerning social effects in visual interaction. First, the presence of 2P affected the perception of 1P, inasmuch as 1P's eyes were perceived to look more toward 2P, and as 1P was perceived to express more emotion. Second, when 2P was perceived as looking at 1P, 1P was perceived as expressing less emotion than when 2P was not perceived as looking at 1P. Third, in presence of 2P, 1P was perceived as focusing the gaze more than when 2P was absent. Finally, whether 2P was present or not, women perceived more emotion on 1P's face than did men.

Whether these differences between 1P and 2P treatment groups were due to the presence or absence of a social object, such as 2P, or whether the presence of any large object, social or nonsocial (e.g., a large potted plant), next to 1P might produce equivalent results, remains open. Similarly, possible differences attributable to the cultural significance of gazing have not been considered. The control exerted by the conditions employed in this experiment clearly indicates the powerful consequences of the second person's presence, and at the very least demonstrates the social psychological dynamics in this complex perceptual and nonverbal behavior.

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Department of Psychology
Boston University
64 Cummington Street
Boston, Massachusetts 02215

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THE EFFECT ON PAIN TOLERANCE OF SOCIAL PRESSURE WITHIN THE LABORATORY SETTING*

Gettysburg College and University of New Hampshire

DONALD S. STRASSBERG AND BURTON I. KLINGER

A. INTRODUCTION

It has been found that reactions to painful stimuli are modifiable. Studies within the cognitive dissonance framework have shown that the higher the reward offered for participating in an experiment using shock, the less shock tolerated by the *Ss*. This was found by Lewin (6) using a monetary reward, and by Zimbardo (12) who used a psychological reward.

Social influence in the form of group affiliation has also been found to affect pain tolerance. Lambert, Libman, and Poser (5) found that when members of one religious group were told that this group was less able to tolerate pain than members of another religious group, there was an increase in pain tolerance for the group receiving this information. Hume and Portnoy (2) extended the above study and concluded that group identification was the key factor and that the greater the group identification, the more the person will defend the group, even at the cost of personal discomfort.

Social pressure administered by instructions from the *E* has also been shown to affect both pain tolerance and the subjective experience of pain. Gelfand (4) and Wolff *et al.* (11) found that *Ss* would take more painful stimulation when simply asked to by the *E*. Sternbach and Tursky (9) showed that even after *Ss* had indicated that they had reached their tolerance level for painful electric stimulation, they could be coaxed into taking more shock. With a different approach, Barber and Hahn (1) obtained a significantly reduced subjective pain rating by asking their *Ss* to imagine a pleasant experience, while their hands were immersed in painfully cold water.

Several studies suggest that sex is an important variable in pain reaction, at least in the experimental situation, since males appear to tolerate more pain than do females. This has been found by Stevens (10) who used several measures and intensities, and by Nottermans and Tophoff (7) using both normal and psychiatric *Ss*.

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The purpose of the present study was to explore further the relationship between reaction to pain and the social conditions under which the painful stimuli are administered. The use of verbal instruction by the *E* was expanded to include a comparison of distraction and direct suggestion. The effect of group social pressure was examined with the use of the direct influence techniques of the Asch-type conformity situation. Since it is possible that the male-female differences obtained in other studies are not linear, it was also felt desirable to examine sex differences in conjunction with the other variables. Thus, the reaction to electric shock was investigated as a function of type of instruction, group pressures, and sex. The hypotheses were (a) distraction instructions and direct suggestion instructions will yield higher shock tolerance scores than will neutral instructions, (b) direct group pressure will increase shock tolerance, (c) males will tolerate more shock than will females.

B. METHOD

1. Subjects

The *Ss* were 48 male and 48 female undergraduate volunteers enrolled in introductory psychology at the University of New Hampshire. When the *Ss* signed up for the experiment they were aware that the electric shock was involved. Each experimental session involved *Ss* of the same sex.

2. Apparatus

The laboratory was a large room containing four cubicles arranged so that the *Ss* could not see each other or the *E*. The apparatus was essentially similar to that designed by Crutchfield (3). Each cubicle contained a panel of lights and switches and the *E* had a master panel on which the *Ss*' panels were represented. The *Ss*' panels were used for the communication of bogus responses and for communication with the *E*. The *E*'s panel controlled what appeared on the *Ss*' panels. The painful stimulation was administered by a constant current device which could deliver up to .06 amperes of electric shock to as many as four *Ss* simultaneously. *Ss* were connected in series to the stimulation device which was controlled by a Hunter timer. Increases in shock intensity with this device represented essentially equal increases in voltage for all *Ss*. The electrodes used were the concentric type as used by Sternbach and Tursky (9).

3. Design

The three independent variables: Instructions, Group Pressure, and Sex were combined to form a $3 \times 2 \times 2$ factorial design, with eight *Ss* in each condition. The Instructions variable was manipulated at three levels: neutral,

distraction, and suggestion. The Group Pressure variable contained two levels: group pressure and no group pressure.

4. Procedure

Ss were randomly assigned to the experimental conditions. Each experimental session included from one to four Ss, depending upon the availability of Ss at the time. The sessions in which group pressure was used always consisted of four persons of the same sex. If four Ss were not available, confederates of the *E* were substituted.

Upon entering the laboratory, all Ss were seated in the cubicles. Then, following the procedure suggested by Sternbach and Tursky (9), the dorsal surface of the left forearm was treated with Redox electrode paste. This lowered the skin resistance of the Ss to between 4,000 and 7,000 ohms which provided a rough equalization of skin resistance and also facilitated conductance.

All Ss were then told that the *E* was going to administer a series of shocks of increasing intensity, each shock lasting for one second. They were also told that they could avoid receiving each shock by pressing the designated button on their panel, but that this had to be done for each shock that they wished to avoid. Thus it was possible for an *S* to avoid every shock if so desired.

The instructions variable was manipulated in the following manner (a) neutral condition: the Ss were told that the *E* wanted to determine, in general, how much shock people are willing to take; (b) distraction condition: Ss were urged to think about some pleasant experience and were advised that this would enable them to tolerate more shock than they would be able to ordinarily; (c) direct suggestion: these Ss were told that if they tried as hard as possible they could take a great deal of shock and, by doing so, would be of great help to the *E* and to the experiment. Thus the Ss in the neutral condition were asked to relate their shock tolerance to people in general, whereas the Ss in the distraction and direct suggestion conditions were led to expect an increase in shock tolerance.

In the group pressure condition, Ss were told that each of the lights on the top row of their panels corresponded to one of the other Ss in the experiment, and that when another *S* pressed the button to avoid a shock, the light corresponding to that *S* would go off. Since *E* controlled the lights and kept them lit constantly, this led each *S* to believe that all the other Ss were taking all the shocks. Ss who did not receive group pressure were unable to communicate with one another during the experiment.

The final step was the administration of the series of 14 shocks of increasing intensity.

C. RESULTS

The dependent variable was a single tolerance score for each subject. This score was determined by the step number (from 1-14) of the last shock the *S* accepted. These scores were combined in each of the 12 experimental groups. The means for these 12 groups are presented in Table 1.

These means were analyzed by a $3 \times 2 \times 2$ analysis of variance. The results of this analysis are presented in Table 2. The significant three factor

TABLE 1
MEAN OF TOLERANCE SCORES FOR THE 12 EXPERIMENTAL GROUPS

Type of instructions	Females (C_1)		Males (C_2)	
	No group pressure (B_1)	Group pressure (B_2)	No group pressure (B_1)	Group pressure (B_2)
Direct suggestion instructions (A_1)	8.00	6.70	8.87	8.25
Distraction instructions (A_2)	5.37	8.25	9.37	8.00
Neutral instructions (A_3)	3.25	6.62	8.00	8.00

TABLE 2
ANALYSIS OF VARIANCE OF THE TOLERANCE SCORES FOR THE INSTRUCTION, GROUP PRESSURE, AND SEX VARIABLES

Source	df	MS	F
Instructions (A)	2	21.05	13.94**
Group pressure (B)	1	6.00	3.97*
Sex (C)	1	100.10	66.29**
A \times B	2	14.15	9.37**
A \times C	2	7.15	4.74*
B \times C	1	32.70	21.66**
A \times B \times C	2	13.50	8.94**
Within	84	1.51	
Total	95		

* $p < .05$.

** $p < .005$.

interaction made it necessary to analyze further the results by testing for simple-simple effects. These results are presented in Table 3.

It can be seen from Table 3 that the distraction instructions yielded higher tolerance scores than the neutral instructions for female *Ss* both with and without the use of group pressure. The direct suggestions instructions yielded

TABLE 3
BREAKDOWN OF ANALYSIS OF VARIANCE INTO TESTS
FOR SIMPLE-SIMPLE MAIN EFFECTS

Source	df	MS	F
A at B ₁ C ₁	2	45.3	30.00**
B ₂ C ₁	2	6.6	4.37*
B ₁ C ₂	2	3.8	2.52
B ₂ C ₂	2	.05	.03
B at A ₁ C ₁	1	6.3	4.17*
A ₂ C ₁	1	33.0	21.85**
A ₂ C ₁	1	45.0	29.80**
A ₁ C ₂	1	1.5	.99
A ₂ C ₂	1	7.5	4.97*
A ₂ C ₂	1	.0	.00
C at A ₁ B ₁	1	3.0	1.99
A ₂ B ₁	1	64.0	42.38**
A ₂ B ₁	1	90.8	59.80**
A ₁ B ₂	1	9.0	5.96*
A ₂ B ₂	1	.3	.20
A ₂ B ₂	1	7.5	4.97*
Within cell	84	1.51	

* $p < .05$.

** $p < .005$.

a higher tolerance score than either the neutral or the distraction instructions for women under no group pressure, but failed to increase tolerance over the neutral instructions for women under group pressure. Neither the direct suggestion instructions nor the distraction instructions resulted in any change in tolerance scores for the males. Group pressure resulted in increased pain tolerance only for women under neutral and distraction instructions. Group pressure resulted in decreased tolerance scores for females under direct suggestion instructions and for males under distraction instructions. For males under neutral and direct suggestion instructions, group pressure had no significant affect.

The results also show that in four of the six experimental conditions the males tolerated more pain than the females, while in two conditions (distraction instructions with group pressure and direct suggestion instructions with no group pressure) the females tolerated as much shock as the males.

D. DISCUSSION

The results of this study indicate that neither Group Pressure, Instructions, nor Sex had a consistent main effect. The effects of each variable were

modified by the particular conditions of each of the other variables with which it was crossed.

1. *Group Pressure*

The effects of group pressure on pain tolerance were surprising. While the predicted increase in tolerance was produced for the females, there was no effect on the males under two of the three instruction conditions. In fact, group pressure actually resulted in decreased tolerance scores for the females under the direct suggestion instructions and for the males under the distraction instructions. In the case of the females it is possible that there was less urgency to tolerate more shock, since the instructions of the group pressure condition led them to believe that all the other *Ss* were taking the maximum amount of shock.

This explanation, however, cannot be applied to the reversal of the males receiving the distraction instructions. In this case it is likely that sampling error may have been involved. It can be observed that the mean tolerance score for the male *Ss* in the no group pressure-distraction cell (9.37) is higher than the mean for any other cell, whereas the mean for the group pressure-distraction cell is identical to three other cells and very close to two others. Therefore, the tolerance levels of the males in this cell may have reflected an artificially inflated increase in the no group pressure-distraction cell.

2. *Instructions*

Both the distraction and direct suggestion instructions displayed the predicted effect of increasing pain tolerance, but only in a limited number of conditions. The distraction instructions had the predicted effect on females, but no effect on the males. The direct suggestion instructions increased tolerance for the females when there was no group pressure, but not when there was group pressure, and did not show any effect on the tolerance score of the males. The effect of the direct suggestion instructions on the female *Ss* has been discussed above in terms of the interaction of the instruction and group pressure variables.

With regard to the female *Ss*, a number of explanations are relevant to the effectiveness of the distraction instructions. Barber and Hahn (1) suggest that a lowered experience of pain and subsequent increase in shock tolerance can occur as a function of shifting attention from the painful stimulus to that of a pleasant fantasy. In addition, Shor (8) has shown that a decrease in anxiety can result in decreased sensation of pain, and a reduction of anxiety

could have been brought in the present investigation by telling the *Ss* that they would experience less pain.

An explanation in terms of expectancy and set to respond, however, can encompass the results of both the distraction and the direct suggestion conditions. Each set of instructions can be viewed as creating certain expectancies for the *Ss'* behavior. The neutral instructions do not carry any expectation of high tolerance levels, while the distraction instructions do so implicitly and the direct suggestions state this explicitly. Such an explanation best fits the findings of this study, since for the female *Ss*, in those conditions where instructions did affect shock tolerance, direct suggestion resulted in the highest score, followed by the distraction and then the neutral instructions. This explanation is also relevant to the findings of other studies (3, 9, 11) inasmuch as high pain tolerance scores have been found to be directly related to instructions that explicitly stated that either a high or an increased pain tolerance was expected. Also, in the Barber and Hahn (1) investigation, the lowest subjective pain scores were obtained from those *Ss* who had been implicitly informed that they were expected to feel less pain.

3. Sex

The most striking result of the study was the almost complete failure of the Instructions and Group Pressure manipulations to affect the pain tolerance scores of the male *Ss*. It is felt that these results represent a meaningful difference in the way males and females react to pain in a given social situation. The female *Ss* tolerated little shock in the control condition, but increased their tolerance in the experimental conditions. The male *Ss*, on the other hand, tolerated high levels of shock in every condition, even the control. Their tolerance scores were essentially the same under all conditions, except for the single exception discussed above.

These differences may well be a function of differences in sex role as defined by society. Since ability to tolerate pain is not typically associated with the female role, it is not surprising that in the control condition, females tolerated little pain. With the imposition of some extrinsic motivation, however, the females responded by increasing their shock tolerance. It is especially noteworthy that in two conditions of increased motivation, females tolerated as much shock as did men, and that this level was quite high. This result is especially interesting since previous studies (7, 10) have consistently found men to tolerate more shock. It is also possible that the sex of the *E* (male) was a factor, and the reactions of females might have differed with a female *E*.

In our society, the notion of masculinity often includes the ability to withstand pain. It seems quite possible that *E*'s attempts at extrinsic motivation may have been overshadowed by the intrinsic need of the males to prove their masculinity in this experimental test of pain tolerance. Thus, since the males may have been at or close to their ceiling for shock tolerance in such a situation, this would account for the failure of the instruction or group pressure manipulations to have any real effect on these *S*s.

E. SUMMARY

This study examined the effects on pain tolerance of group pressure, instructions of the *E*, and sex of the *S*. It appeared that pain tolerance was affected by these variables in a complex interactive manner. It was suggested that expectations in the situation and sex-related role playing may be important concepts in the understanding of reactions to painful stimuli.

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Department of Psychology
Conant Hall
University of New Hampshire
Durham, New Hampshire 03824

STRATEGY DETECTION IN THE PRISONER'S DILEMMA GAME*

University of Kansas

DAVID A. SUMMERS, STEPHEN PEIRCE, DALE OLEN, AND
THOMAS BARANOWSKI

A. INTRODUCTION

It is frequently suggested that *S*'s behavior in experimental games—such as the Prisoner's Dilemma—is at least partially influenced by the strategy of the Other: i.e., that *S* will behave cooperatively if the Other also behaves cooperatively. Despite the broad theoretical support for such a proposition (2, 5, 9), the experimental evidence (based upon the behavior of American undergraduates) is inconsistent. Although a few studies have reported that *S*'s behavior is influenced by the Other's overall strategy (7), most of the studies in this area have not (1, 4, 6).

One possible explanation for these latter findings is that *S*'s behavior is *not* substantially influenced by the strategy of the Other, but is instead primarily a function of *S*'s *predispositions* to behave cooperatively (8). Another possibility which has not yet been investigated is that the kinds of strategy manipulations involved in these studies have not been accurately *detected* by *S*; i.e., that *S*s misperceive the level of cooperation evidenced by the Other. It is with this latter possibility that the present study is concerned.

The present study has a two-fold purpose: (a) to assess the accuracy with which *S* can detect the Other's level of cooperation, reciprocation of cooperative choices, and reciprocation of noncooperative choices; and (b) to determine the relationship between *S*'s perception of the Other's behavior and *S*'s own behavior in the Prisoner's Dilemma.

B. METHOD

1. *Design and Subjects*

All *S*s played against a simulated Other in a 100-trial Prisoner's Dilemma in which the following payoffs (in points) accompanied each outcome: mutual cooperation (+5, +5); cooperation by *S*, noncooperation by Other (−4, +6); noncooperation by *S*, cooperation by Other (+6, −4); and mutual

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noncooperation (-3 , -3). Nine experimental conditions were generated, where each condition reflected a different level of cooperation by the simulated Other; i.e., 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, and 90% cooperation. The order in which cooperative and noncooperative choices were assigned to the Other was randomized within blocks of 20 trials. A total of 72 undergraduate males participated in the experiment.

2. Apparatus

Ss were seated in front of (a) a signal light denoting the beginning of each trial; (b) a response board on which were mounted two response buttons; and (c) an outcome display panel on which was mounted a replica of the game matrix with a signal light in each cell.

3. Instructions and Procedure

Written instructions described the complete game matrix, and explained the rules of the game in detail. Although the instructions were neutral with regard to S's task goals (3), S was told that the three Ss who scored the highest number of points would each be awarded \$5.00.

After having read the instructions, Ss completed 100 trials (in isolation), where each trial consisted of the following steps: (a) E signaled the beginning of the trial; (b) S received 20 seconds in which to push button one or button two; and (c) S was shown (on the outcome display panel) the payoffs he and the Other received.

4. Posttask Questionnaire

At the conclusion of the task, S was given a questionnaire consisting of items which asked S to indicate (a) the total frequency of cooperative responses by the Other; (b) the percentage of the time that his own cooperative choices were followed by a cooperative choice by the Other on the next trial; and (c) the percentage of the time his own noncooperative choices were followed by a noncooperative choice by the other on the next trial. All items were accompanied by a 100-point response scale.

C. RESULTS

Three aspects of S's task behavior were assessed: level of cooperation (total frequency of cooperative choices), reciprocation of cooperation, and reciprocation of noncooperative choices. In each case, analyses are reported concerning (a) the relationship between S's behavior and the strategy of the Other; (b) the accuracy of S's perception of the Other's strategy; and (c)

the amount of *S*'s response variance which can be accounted for by *S*'s perception of the Other's strategy, holding actual strategy of the Other constant.

1. Level of Cooperation

As can be seen in Figure 1, there was a weak, but noticeable tendency for *S*'s of cooperation to increase as a function of the level of cooperation shown by the Other; i.e., as the proportion of cooperative choices by the Other increased from 10% to 90% (conditions 1 through 9), the proportion of cooperative choices by the *S*s also increased somewhat. In this regard, the correlation between *S*'s level of cooperation and cooperation by the Other was .44 ($p < .01$).

As can be seen also in Figure 1, *S*'s were generally quite accurate in estimating the level of cooperation by the Other. Specifically, the correlation between

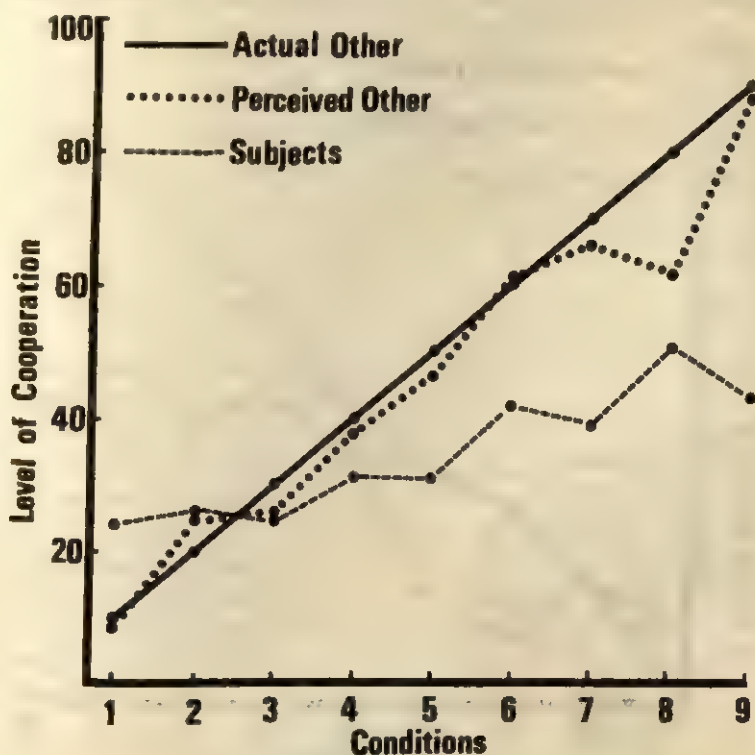


FIGURE 1
MEAN LEVELS OF COOPERATION ACCORDING TO EXPERIMENTAL CONDITIONS

the actual frequency of cooperative choices by the Other and *S*'s perceived frequency was .85 ($p < .01$). Moreover, no evidence was found of significant bias toward either under- or overestimation.

Finally, the partial correlation between *S*'s *perceived* cooperation by the Other and *S*'s *own* level of cooperation (holding constant the actual cooperation by Other) yielded a negligible result: $r_p = .01$. In short, taking into account the *perceived* strategy of the Other does not improve our prediction of *S*'s own level of cooperation.

2. Reciprocation of Cooperative Choices

The proportion of *S*'s cooperative choices reciprocated by the Other on the following trial was calculated, as was the proportion of the Other's cooperative choices which *S* reciprocated on the following trial. As shown in Figure 2, the relationship between the Other's cooperative reciprocation and *S*'s

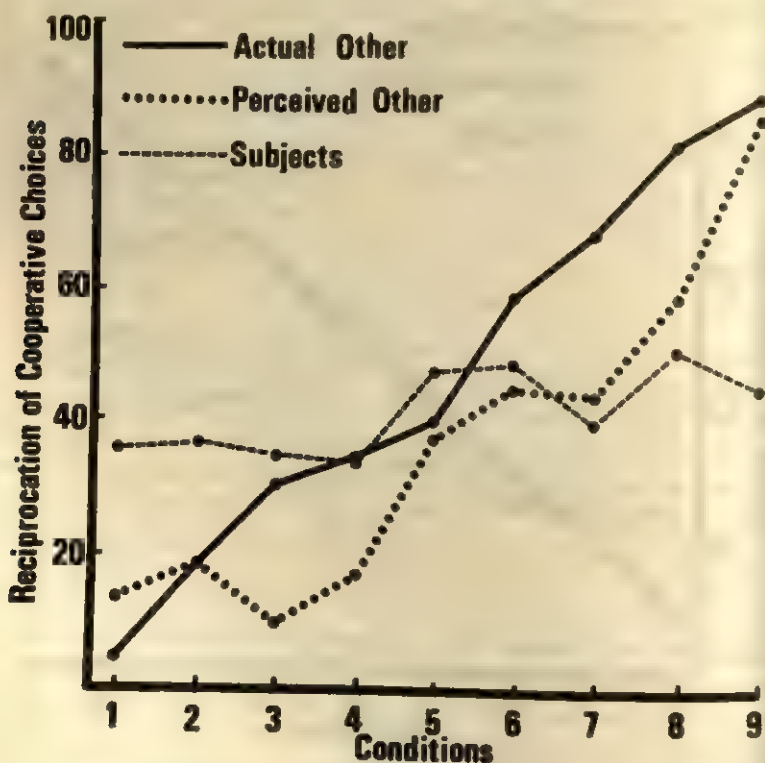


FIGURE 2
MEAN LEVELS OF COOPERATIVE RECIPROCATION ACCORDING
TO EXPERIMENTAL CONDITIONS

cooperative reciprocation was slight; i.e., the correlation between the two indices was only .16 (NS). And, here too, *S*s were generally accurate in detecting the cooperative reciprocation by the Other ($r = .70, p < .01$). Note, however, that in seven of the nine conditions *S*s showed a noticeable tendency to *underestimate* the proportion of their own cooperative choices reciprocated by the Other. Even when all nine conditions are taken into account, the mean estimate of the Other's cooperative reciprocity (37.1%) was significantly less ($p < .01$) than the actual reciprocity of the Other (47.6%).

With regard to the relation between the perceived strategy of the Other and reciprocation of cooperative choices, the analysis yields a positive result; i.e., the partial correlation between *S*'s reciprocation of cooperation and the perceived reciprocation by the Other (holding actual reciprocation by the Other constant) is .26 ($p < .05$). Thus, a small, though statistically significant proportion of *S*'s response variance can be accounted for by *S*'s perception of the strategy of the Other—at least in terms of reciprocity behavior.

3. *Reciprocation of Noncooperation*

Here again, two indices were calculated for each *S*: the proportion of *S*'s noncooperative choices reciprocated by the other on the following trial, and the proportion of the Other's noncooperative choices that *S* reciprocated on the following trial. As can be seen in Figure 3, the relationship between the behavior of the simulated Other and *S*'s behavior is positive, though weak; i.e., the correlation between the two indices is only .31 ($p < .05$). Thus, the greater the likelihood that the Other reciprocates *S*'s noncooperative choices with noncooperative choices on the following trial, the greater the likelihood that *S* will behave in a similar manner.

Note, also, that *S* is fairly accurate in detecting the proportion of his noncooperative choices that the Other reciprocates; i.e., the correlation between *S*'s estimates of the Other's noncooperative reciprocity and the actual behavior of the Other is .79 ($p < .01$). No significant bias toward under- or overestimation was found.

With regard to the relationship between *S*'s reciprocation of noncooperation and the perceived reciprocation by the Other, a negligible partial correlation was obtained ($r_p = .12$ NS).

D. DISCUSSION

The major findings of this study are that (a) *S*'s game behavior was not substantially influenced by the strategy of the Other; (b) *S*'s detection of

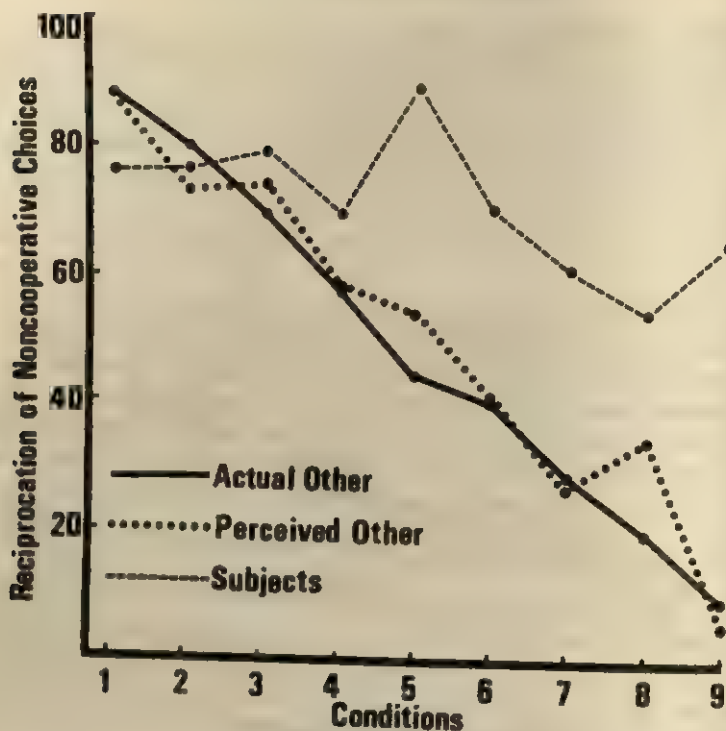


FIGURE 3
MEAN LEVELS OF NONCOOPERATIVE RECIPROCATATION ACCORDING
TO EXPERIMENTAL CONDITIONS

the Other's strategy was generally accurate; and (c) *S*'s behavior was not closely related to the *perceived* strategy of the Other, independent of the Other's *actual* strategy.

With respect to the first finding, the results reported here show only a moderate departure from most other findings concerning the effects of the Other's overall strategy. Although a statistically significant relationship was found between Other's frequency of cooperative choices and *S*'s level of cooperation, the relationship was nevertheless quite weak. Likewise, the relationship between *S*'s trial-by-trial reciprocation of the Other's choices and the Other's reciprocation was also weak. With respect to these indices, it is worth noting that *Ss*' tendency to reciprocate *noncooperative* choices of the Other (71%) was considerably stronger than their tendency to reciprocate *cooperative* choices of the Other (41%).

Equally important was the finding that *Ss* had little difficulty detecting the Other's overall level of cooperation, as well as the proportion of own noncooperative choices which the Other reciprocated. Indeed, the only aspect of the Other's strategy which *S* was unable to detect accurately was reciprocation of cooperation: i.e., the proportion of *S*'s cooperative choices that the Other reciprocated on the following trial. Here, *Ss* were not only least accurate in terms of covariation, but also in terms of absolute errors of judgment; i.e., *Ss* consistently underestimated the extent of the Other's cooperative reciprocation.

Finally, it was found that in only one respect was prediction of *S*'s behavior significantly improved by taking into account *S*'s perception of the Other's strategy. Thus, *S*'s own reciprocation of cooperative choices was significantly ($p < .05$) related to the perceived reciprocity of the Other (holding actual reciprocity constant). The increase in predictability, however, was small ($r_p = .25$).

In conclusion, these results suggest that not only are *Ss* generally accurate in detecting the Other's strategy, but that errors in detection that *do* occur are not sufficient to account for the discrepancy between *S*'s behavior and the behavior of the Other. It is possible, of course, that the kinds of strategy manipulations involved here (level of cooperation) were not salient to most *Ss*; i.e., it is possible that *Ss* focus upon other aspects of the Other's behavior when choosing their own responses. Although this possibility cannot be discounted, the findings reported here suggest that *S*'s behavior bears only a weak relationship to the overall strategy of the Other—either actual or perceived.

E. SUMMARY

Undergraduate *Ss* were studied in a Prisoner's Dilemma game involving nine levels of cooperation by the Other. It was found that at the conclusion of 100 trials, *Ss* were quite accurate in their detection of the Other's overall level of cooperation, as well as the Other's reciprocation of *S*'s noncooperative choices. On the other hand, it was found that the detection of the Other's reciprocation of *S*'s cooperative choices was frequently inaccurate. With regard to the latter, *S*'s own reciprocation of the Other's cooperative choices was found to be significantly related to *S*'s perception of the Other's strategy.

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Department of Psychology
The University of Kansas
Lawrence, Kansas 66044

THE EFFECT OF SKIN COLOR AND PHYSIOGNOMY ON RACIAL MISIDENTIFICATION*¹

Boston University

A. GEORGE GITTER, DAVID I. MOSTOFSKY, AND YOICHI SATOW

A. INTRODUCTION

It has been some 30 years since the publication of the first studies by Clark and Clark (1, 2). The importance of racial misidentification as a behavioral phenomenon and as a socially relevant problem has been noted in the numerous studies that have appeared since that time (3, 4, 6, 7, 8).

Experimental studies of racial misidentification have thus far neglected to consider the contribution of physiognomy as a relevant variable, and for the most part seem concerned only with skin color. Such an omission would appear to be especially serious when the perceivers are children (5).

B. METHOD AND PROCEDURES

Eighty (80) white and black children of both sexes were used. They ranged in age between four and six years ($\bar{X} = 59.9$ months). They were tested according to a balanced $2 \times 2 \times 2$ factorial design [sex, race (white *vs.* black), and age (younger *vs.* older)]. The n for the cells fluctuated between 6 and 14. All the children were enrolled in Headstart Centers in the Metropolitan Boston area. Each S was individually shown six 35 mm slide presentations. Each slide depicted three of a set of nine dolls which were photographed on color transparency film. A set of nine male dolls was used for male S s and a comparable set of nine female dolls was prepared for female S s. For each set, the dolls differed in three levels of color and in three levels of physiognomy. The left-to-right arrangement of the three dolls in each of the six slides was randomly determined for the possible combinations ($N = 6$) of color and physiognomy variations.

Levels of skin color were defined in terms of the PMS (Printing Ink Co.)

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¹ The research reported herein was performed pursuant to a contract for the Office of Economic Opportunity, Executive Office of the President, Washington, D. C. The opinions expressed herein are those of the author, and should not be construed as representing the opinions or policy of the United States Government.

System. Light, medium, and dark skin colors were PMS #156, PMS #145, and PMS #168, respectively.

Levels of physiognomy were defined in terms of anthropologically based criteria comprising the combination of (*a*) thickness of lip, (*b*) width of nose at base, and (*c*) texture of hair. The three levels of physiognomy were Caucasian—thin lips, thin nose, and straight hair; Mulatto—thicker lips, wider nose, and wavy hair; Negroid—thick lips, wide nose, and kinky hair.

A black interviewer was used with black *Ss*, and a white interviewer was used with the white *Ss*. Each *S* was seated in front of a movie screen and was shown the six slides. The sequence of presentation of the six slides was randomized for each *S*. After being presented with a slide, the *S* was asked, "Which doll looks most like you?" Response scores to slides #1, #2, and #3 were averaged to obtain *Ss* Self-Rated Color Score. *S* was scored 10 if he identified himself with a doll of light color, 20 if he chose medium color doll, and 30 if he believed that he looked like a dark color doll. Responses to slides #4, #5, and #6 were averaged to obtain *Ss* Self-Rated Physiognomy Score. *S* was scored 10 if he identified himself with the doll of Caucasian physiognomy, 20 if he chose the Mulatto physiognomy doll, and 30 if he believed that he looked like a Negroid physiognomy doll. Finally, each *S* was asked "Are you white, or are you Negro, colored, or black?" All three terms—Negro, colored, and black—were included in the question to minimize the chances of a black *S's* misidentification due to unfamiliarity with any one of these terms.

Each *S* was also photographed in color, holding a panel with three colors used to color the dolls. These photographs were used to rate each *S's* color and physiognomy. Four judges rated each *S's* color and physiognomy, using the same 10-20-30 color and physiognomy scales as were utilized to score *Ss'* responses to the six slides. The four judges' ratings of a *S's* skin color were averaged to obtain his Judge-Rated Color Score. Similarly, their ratings of the *S's* physiognomy were averaged to obtain his Judge-Rated Physiognomy Score. Mean interjudge reliability for rating *Ss'* skin color and physiognomy was .94 and .88 respectively.

Subject's racial misidentification was determined according to three measures: (*a*) Color Misidentification Score—i.e., differences between *S's* Self-Rated Color Score and Judge-Rated Color Score; (*b*) Physiognomy Misidentification Score—i.e., the differences between *S's* Self-Rated Physiognomy Score and Judge-Rated Physiognomy Score, and (*c*) Verbal Misidentification Score—i.e., the *S's* response to the question, "Are you white, or are you Negro, colored, or black?" which was scored either correct or incorrect.

C. RESULTS

1. *Comparison of White vs. Black Children*

Black Ss, as compared to white ones, misidentified significantly more in terms of all three measures. From an analysis of variance (ANOVA), black children's color scores ($\bar{X} = 8.45$) were found to be significantly higher ($F = 4.66, p < .05$) than those of their white counterparts ($\bar{X} = 5.85$), indicating that the extent to which the former perceived their skin color to be lighter than it was judged was greater than the extent to which the latter perceived their skin color to be darker than it was judged. Similarly, black children's physiognomy scores ($\bar{X} = 10.57$) were significantly higher ($F = 20.64, p < .001$) than those of white ones ($\bar{X} = 5.05$), indicating that the extent to which the former perceived their lips and noses thinner and their hair straighter than they were judged was greater than the extent to which the latter perceived their lips and noses thicker and their hair kinkier than they were judged. Finally, black children also misidentified significantly more ($F = 23.40, p < .001$) in terms of verbal scores; while 15 of the 40 black children misidentified themselves by answering that they were "white," none of the white children answered that they were "black," "colored," or "Negro."

The S's sex proved to be a significant variable for the Color Scores. The extent to which male Ss perceived their skin lighter than it was judged ($\bar{X} = 8.39$) was significantly greater ($F = 4.90, p < .05$), then that of female Ss ($\bar{X} = 5.60$), indicating that girls perceived their skin color more veridically than did boys. Sex differences were not significant in terms of either Physiognomy or Verbal Scores.

Age was nonsignificant both as a main effect and in first- and second-order interactions.

2. *Comparisons Among Black Children*

The black Ss were dichotomized on the basis of their Judge-Rated Color Scores. Black Ss whose skin was judged darker, as compared to those with lighter judged skin, misidentified significantly more. Specifically, the darker-skinned black Ss' Color Scores ($\bar{X} = 10.54$) were significantly higher ($F = 8.03, p < .01$) than those of their lighter-skinned counterparts ($\bar{X} = 4.98$), indicating that they greatly misperceived their skin color to be lighter than it was judged. Likewise, the darker-skinned black S's Physiognomy Scores ($\bar{X} = 11.85$) were significantly higher ($F = 8.21, p < .01$) than those possessing lighter skin ($\bar{X} = 7.04$), indicating that they perceived their

lips and noses thinner and their hair straighter than it was judged. The darker-skinned black *S*'s did not significantly differ from their lighter-skinned counterparts in terms of verbal scores: that is, in terms of frequency of responding "white" to the question, "Are you black, colored, or Negro, or are you white?" Among black children, both Sex and Age of *S* were non-significant. Of all the first- and second-order interactions, only two were significant: Light-dark Skin \times Age ($F = 7.93, p < .01$) and Sex \times Age ($F = 5.85, p < .05$).

The extent of racial misidentification for younger black children in terms of physiognomy was approximately equal of both the dark and light skinned. As they grew older, darker skinned *S*'s apparently misidentified more than their lighter skinned counterparts.

The extent of racial misidentification in terms of physiognomy among black boys and girls was differentially associated with age. While among the younger children girls tended to misidentify more than boys, the trend was reversed among the older *S*s.

D. SUMMARY AND CONCLUSIONS

The results are in accord with the findings of the preponderant majority of previous racial misidentification studies which show greater racial misidentification on the part of black than white children, and that among black *S*s, dark-skinned children misidentify more than their light-skinned counterparts. The present findings also show that physiognomy and, to a lesser extent, verbal identification are more potent variables in misidentification than skin color. These results do, however, appear to contradict those of Greenwald and Oppenheim (5). Not only does a reanalysis of their data suggest misidentification in the nonpredicted direction, but their study suffers from an additional methodological weakness—viz., an unspecified calibration of the dolls' appearance. Together with the fact that their study did not consider manipulation of physiognomy, the discrepant findings may be thereby accounted for.

In the years since the Clarks' study appeared, little has changed the image that the black child has of himself, an image imposed on him by the dominant white society. The recent past may well have wrought some changes in the image of black Americans, exemplified by such phenomena as the "black is beautiful" slogan and the dramatic increases of blacks in the various mass media. However, the effect of this new race awareness "revolution" and its relationship to the racial self-identification of black children is still not entirely understood.

The larger environmental and social climate may well affect the outcome of studies, such as the one reported here, and one must be sensitive to conditions that might have changed since 1968 when this experiment was conducted.

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Department of Psychology
Boston University
64 Cummington Street
Boston, Massachusetts 02215



CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requiring tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 88, 145-146.

PREDICTORS AND DETERMINANTS OF EDUCATIONAL PERFORMANCE IN THE SOUTH PACIFIC*

University of the South Pacific, Suva, Fiji

MICK BENNETT

The cross-cultural psychometrician is faced with a number of confusing situations in advising on the utilization of measures that he may develop or adapt. One to these situations is that in which he is expected to develop "compensatory" measures (usually tests of the nonverbal series continuation kind) performance on which is not so dependent on teacher ability, home environment, etc. as are conventional attainment measures. However, although the measures are required to compensate for educational disadvantage, they are also expected to have acceptable predictive validity in a system where all groups are competing for the limited further education places, and the validities of the predictors are, consequently, likely to vary along the advantaged-disadvantaged continuum.

This situation is well illustrated in Fiji, an extremely heterogenous society both racially and in terms of urban/rural experience. Here a nonverbal reasoning test was developed to meet the criterion mentioned above for selection into secondary schools (after eight years schooling). It was found that, although the test means and variances were comparable, the internal attributes of the test (in particular, biserial-correlation coefficients between items and total)¹ tended to be significantly higher in the sample of rural

* Received in the Editorial Office, Provincetown, Massachusetts, on November 11, 1971, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1972, by The Journal Press.

¹ Bennett, M. J. Reasoning test response in urban and rural Fijian and Indian groups in Fiji. *Aust. Psychol.*, 1970, 5, 260-266.

children (both Indian and Melanesian groups) than in the sample of urban children (Indian and Melanesian). Presumably, the experience of the former is more homogenous, and their stability of response on this measure tends to be greater than that of the urban sample.

However, when a sample of 400 children tested in 1969 were followed up in 1970 and their performance on the nonverbal test correlated with performance in a formal national examination (English, Arithmetic, and General Subjects), the predictive value of the test was higher with the two urban groups ($r = .62$ for both Melanesian and Indian urban) than with the rural groups (.34 for Indian rural and .27 for Fijian rural). In other words, the predictive value of the measure appears to be inversely related to the internal strength of the test, where there are wide variations in the type and quality of experience of the children.

Clearly, it is unwise to consider predictors in isolation in this situation. It has long been recognized that conventional test development methods have to be treated with caution cross culturally. It would seem wise to tread cautiously also with selection models. Test response patterns cannot be thoroughly understood and predictors cannot be developed effectively without investigating the determinants of these varying patterns. Industrial psychologists do not expect to develop predictors without first attempting job analyses, nor can educational psychologists do so. "Compensatory" tests must have strictly limited utility until we understand more thoroughly the nature of the disadvantages facing children with widely different backgrounds from nonstandard populations attempting to succeed in a formal, Western imposed education system.

The University of the South Pacific
P.O Box 1168
Suva, Fiji

CREATIVE DISCONTINUITIES OF EUROPEAN SCHOOLCHILDREN*

Chicago State College

EARL J. OGLETREE

In America, parents and teachers are aware of the creativity of school-age children, then the loss of these qualities during the elementary-school years. The creativity loss, which is attributed to maturation and cultural influences, has been found in cultures that emphasize early formal education. Torrance and others have found discontinuities on the nonverbal tasks at age 9-10 among American children.^{1, 2, 3}

This study was undertaken in England, Scotland, and Germany during 1966 and 1967 to determine if discontinuities in creative behavior existed in these countries. A total of 1165 primary school children ages 8-12 were studied, including 557 boys and 608 girls; 479 were English, 193 Scottish, and 493 German.

The sample included six Steiner schools and six state schools. The state and the matched Steiner schools were located in Strourbridge, Ikeston, and Gloucester, England; Edinburgh, Scotland; Volkshules in Stuttgart and Munich, Germany.⁴ Steiner or Waldorf Schools were selected because of their idealistic philosophy, the child-centered curriculum within which creativity is emphasized through the media of the arts. The Steiner method is a motoric-affective approach during the elementary-school years. The state schools were more subject-matter and intellectually oriented. The two school samples were matched according to their socioeconomic backgrounds.

The subjects were given the Torrance Tests of Creative Thinking. Data were analyzed by one- and two-way analyses of variance. The open-ended creativity tests measure verbal and drawing (figural) fluency (quantity of

* Received in the Editorial Office, Provincetown, Massachusetts, on November 11, 1971, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1972, by The Journal Press.

¹ Torrance, E. P. *Role of Evaluation in Creative Thinking*. Minneapolis: Univ. Minnesota, 1964. P. 310.

² Miel, A. *Creativity in Teaching*. Belmont, Calif.: Wadsworth, 1961. Pp. 2-8.

³ Samples, R. E. *Wari's handicap—The impediment of creativity*. *Sat. Rev.*, July 15, 1967, 56-57, 74.

⁴ Steiner schools founded in Germany in 1919 by the educator Rudolf Steiner. Now there are 83 Steiner schools in 18 countries, including 10 in America.

ideas), flexibility (categories of ideas), originality (frequency of ideas), and elaboration (expansion of ideas).

The data cross-culturally revealed no significant decrements in creative development in either school system. An increase in grade level evidenced an accompanying increase in creativity obtained on most variables. Total mean creativity score for third graders was 145.5 as compared to 206.5 for sixth graders.

Since both English and Scottish children begin school at age 5, and German children at age 6, findings varied slightly when data were examined by age. Older children obtained significantly higher scores on the verbal variables than did younger children. The mean total verbal score was only 40.9 for 8-year-olds compared to 84.6 for 12-year-olds. On the nonverbal variables, the pattern is similar, with the exception of the insignificant differences in scores between 8-, 9-, and 10-year-olds. The 8-year-olds significantly outscored their 9-year-old peers on figural elaboration, but not on total figural score. These results show the figural tasks to be less dependent on abstract reasoning and more compatible with the 8-year-olds' cognitive style.

*Chicago State College
West Center
500 North Pulaski Road
Chicago, Illinois 60624*

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 88, 149-150.

EFFECTS OF THE DEFENDANT'S CHARACTER AND SUFFERING ON JURIDIC JUDGMENT: A REPLICATION AND CLARIFICATION*¹

University of Rochester and University of Alberta

HAROLD SIGALL AND DAVID LANDY

Results of a laboratory study by Landy and Aronson,² and of survey research,³ suggest that juridic judgment is affected by defendant likeability, even though, according to law, such judgments should not be influenced by extra-legal considerations.

In the Landy and Aronson study, subjects read a description of an automobile homicide offense and sentenced the defendant, whose attractiveness was varied, to a specific term of imprisonment. The unattractive defendant received longer sentences than did the attractive defendant.

Landy and Aronson used a variety of background and personal characteristics to describe the defendant. While this maximized the possibility of creating differential attractiveness, it made it impossible to identify the specific qualities which affected subjects' sentiments. For example, the attractive defendant was said to have been hurt during the perpetration of the crime, while the unattractive defendant reportedly was uninjured. Whether or not suffering associated with a criminal offense affects juridic judgment is a ques-

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¹ This study was supported by a grant from the Human Resources Research Council (55-08035) to David Landy. The authors thank Linda Breaker and Kerrie Pain for their assistance.

² Landy, D. & Aronson, E. The influence of the character of the criminal and his victim on the decisions of simulated jurors, *J. Exper. Soc. Psychol.*, 1969, 5, 141-152.

³ Kalven, H., Jr., & Zeisel, H. *The American Jury*. Boston: Little, Brown, 1966.

tion pursued in the present study. We also attempted to replicate Landy and Aronson in a manner that would more clearly define attractiveness in terms of personal likeability (rather than sympathy due to injury).

In a 2×4 factorial design, which varied defendant attractiveness and suffering, 184 students (105 males, 79 females) at the University of Rochester acted as simulated jurors. Subjects were randomly assigned to condition. Each subject read a case account of a manslaughter offense.⁴ The defendant was described as attractive—e.g., loving, warm, etc.—or as unattractive—e.g., cold, unapproachable, etc. He was also said to have suffered loss of sight in one eye before, during, or after the crime, or no mention of suffering was made. After the case was read, the main measure was taken: subjects sentenced the defendant to a term of imprisonment which could range from 1 to 20 years.

We predicted a main effect: the unattractive defendant would be punished more harshly than the attractive defendant. We also predicted an interaction: suffering by the attractive defendant would lead to leniency, while identical suffering by the unattractive defendant would increase severity. The reason underlying this prediction was that suffering experienced by an unattractive individual would be seen as further evidence of his culpability, while the attractive defendant's suffering would induce sympathy, especially when the suffering occurred during or after the crime.

Results showed that the attractiveness manipulation was successful: the attractive defendant was viewed more positively than his unattractive counterpart ($F = 77.83$, $df = 1, 183$, $p < .001$). The mean sentence given the attractive defendant was 6.52 years; the unattractive defendant received 9.22 years. This significant difference ($F = 16.04$, $df = 1, 183$, $p < .001$) constitutes a conceptual replication of Landy and Aronson, and indicates that sympathy aroused by suffering is not an essential part of the relationship between defendant likeability and punishment administered to him. The hypothesized interaction did not materialize.

Department of Psychology
University of Maryland
College Park, Maryland 20742

⁴ Details available from authors.

EFFECTS OF NOISE AND INTOLERANCE OF AMBIGUITY UPON ATTRACTION FOR SIMILAR AND DISSIMILAR OTHERS*¹

University of Idaho

ANDREW J. BULL, SUSAN E. BURBAGE, JAMES E. CRANDALL,
CHARLES I. FLETCHER, JOHN T. LLOYD, RONALD L.
RAVNEBERG, AND STEVEN L. ROCKETT

Unpleasantly high temperatures and overcrowding have been found by Griffitt² to decrease attraction to others. Attraction was measured by the Interpersonal Judgment Scale which *S* completed after reading the responses of a supposedly real person to a 44-item attitude questionnaire. The latter was prepared to show either 25% or 75% agreement with *S*'s attitudes. Consistent with earlier research, it was also found that attraction was enhanced by attitude similarity.

The main purpose of the present experiment was to determine whether loud noise, an increasingly common stressor, would have a similar effect on interpersonal attraction. Since previous research³ found a positive relation between intolerance of ambiguity (IA) and dislike for disagreement, the study also investigated the hypothesis that the effects of similarity upon attraction are stronger for *Ss* who are high on IA than for those who are low.

The *Ss* were 64 volunteers (32 males) who were informed that the main purpose of the study was to investigate the effects of noise on performance of various tasks. Pretesting involved a 20-item attitude questionnaire. With the use of these responses, two questionnaires were prepared to show 25% and 75% agreement with each *S*. Testing involved groups of eight, same-sex *Ss*. The noise condition involved simultaneous presentation of two different sound tracks of mechanical noises, played at an average of 84 db. This level was chosen because it is intense enough to be unpleasant, but not so intense as to be

* Received in the Editorial Office, Provincetown, Massachusetts, on September 1, 1971. Copyright, 1972, by The Journal Press.

¹ Reprints and a more detailed report are available from James E. Crandall (see address below).

² Griffitt, W., & Veitch, R. Hot and crowded: Influences of population density and temperature on interpersonal affective behavior. *J. Personal. Soc. Psychol.*, 1971, 17, 92-98.

³ Crandall, J. E. Self-perception and interpersonal attraction as related to tolerance-intolerance of ambiguity. *J. Personal.*, 1969, 37, 127-140.

rare in everyday life. The control condition had a background noise level of approximately 40 db. Two unacquainted Ss sat facing each other over a 10-inch partition at each of four tables. Five minutes were allotted for each of the first four tasks: multiplication, Budner's⁴ IA scale, anagrams, and the Nowlis⁵ Mood Adjective Check List. The S then read the high and low similarity questionnaires, allegedly filled out by other students, and rated each respondent on an Interpersonal Judgment Scale. Finally, S completed a scale for the person sitting opposite.

Noise had no effect on any of the preliminary tasks, nor on attraction to S's table partner. A three-way analysis of variance (sex \times noise \times similarity) of the attraction to questionnaire respondents showed no effect of noise or sex, although similarity strongly influenced attraction in the expected direction ($F = 97.71$, $df = 1/60$, $p < .001$). There was also a significant three-way interaction ($F = 4.19$, $df = 1/60$, $p < .05$). Males showed more differentiation of attraction as a function of degree of similarity under control than under noise conditions, whereas females did just the opposite.

The hypothesis concerning IA was tested separately for noise and control conditions. Differences in attraction for high and low similarity others shown by the eight highest scoring men and the eight highest women on the IA scale were compared to the lowest scoring men and women. The hypothesis was confirmed in the control condition. Mean differences in attraction (in favor of the similar others) were 4.19 for high IA Ss and 2.00 for low IA Ss ($t = 2.36$, $df = 30$, $p < .05$, two-tailed test). However, in the noise condition low IA Ss became indistinguishable from high IA Ss, and were significantly more responsive to degree of similarity than under the more normal control condition ($t = 2.49$, $df = 30$, $p < .02$). Both sexes showed the same trends. As with the above sex difference, it is of potential importance to determine whether these effects occur with other types of stressors.

James E. Crandall

Department of Psychology

University of Idaho

Moscow, Idaho 83843

⁴ Budner, S. Intolerance of ambiguity as a personality variable. *J. Personal.*, 1962, 30, 29-50.

⁵ Nowlis, V. Research with the Mood Adjective Check List. In S. Tomkins & C. Izard (Eds.), *Affect, Cognition, and Personality*. New York: Springer, 1965.

THE EFFECTS OF TACTILE STIMULATION ON VISUAL EXPERIENCE*

University of San Francisco

COLIN SILVERTHORNE, CYNTHIA NOREEN, TANI HUNT, AND LESLIE ROTA

The current study tests the effect of tactile stimulation on visual appreciation. It was hypothesized that tactile communication would enhance the aesthetic ratings of neutral stimuli particularly when the *E* and the *S* were of the opposite sex. The *Ss* were 97 undergraduate students (48 male and 49 female) from introductory psychology courses at the University of San Francisco. One female *S* was not used in the analysis, since she showed an agitated response to the *E*'s touch. The *Ss* were told that the experiment was aimed at providing information on the aesthetic value of a series of four slides. *Ss* were then given a booklet containing four scales, one for each slide, and instructed to check after each slide the appropriate space on the seven-point scale that reflected his rating of the aesthetic qualities of that slide. The *Ss* were seated behind a slide projector at a distance of four feet from the screen in a dim but not dark room. Half of the *Ss* (24 male and 24 female) had a male *E* and the other half had a female *E*.

The slides were four different arrangements of three black geometrical figures (a circle, square, and triangle) on a yellow background. These slides were chosen as being neutral and of minimal aesthetic value. Each slide was presented for five seconds, and the subject was given a further five seconds to respond. On two of the slides the *E* touched the slide projector as if to adjust the focus. At the same time the *Es* other hand was gently placed on the left shoulder of the subject for some three seconds. The order of presentation of the slides and the order of touch was determined by randomly selecting several 4×4 latin squares. *Ss* were touched on two of the slides and not on the other two. When all four slides had been presented, the ratings were collected and the *Ss* left the cubicle. A short questionnaire was then administered to investigate whether they were aware of the experimental manipulation. Further, *Ss* were observed during the experiment through the one-way mirror for any reactions.

The data indicate that the hypothesized effects of tactile stimulation had

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only slight differential effects, depending on the sex of the *S* and the *E*. Two three-way analyses of variance with repeated measures were computed for the data; one for the male *E* and the other for the female *E*. The results showed that there was no significant difference in the *Ss*' ratings of the four slides [for male *E* $F(3,66) = 1.5, p > .05$; and for female *E* $F(3,66) < 1, p > .05$]. Further, the *F* associated with the sex of the subject was not significant [for male *E*, $F(1,11) = 1.9, p > .05$; and for female *E*, $F(1,11) = 2.1, p > .05$]. However, the *F* associated with the variable of touch was significant [for male *E*, $F(1,66) = 4.90, p < .05$; and for female *E*, $F(1,66) = 5.81, p < .05$] with all *Ss* preferring slides when they were touched. All interactions were not significant.

The present results clearly indicate that touch was an important variable in the aesthetic appreciation of subjects. Since none of subjects indicated awareness of touch as a significant part of the experiment, its effect appears to be at a subliminal or even unconscious level.

Touch then appears to be an important variable in some cognitive processes. Future research in the area should be able to identify these processes more fully. Further, the stimuli used in this study were deliberately neutral, whereas in day to day touch experiences the stimuli involved usually have a more emotional component. Such situations are worthy of further considerations.

Department of Psychology
University of San Francisco
San Francisco, California 94117

RESISTANCE TO TEMPTATION, MORAL DEVELOPMENT, AND PERCEPTIONS OF PARENTAL BEHAVIOR AMONG ADOLESCENT BOYS*

Department of Social Sciences, Clarkson College of Technology

EUGENE M. FODOR

Previous research has suggested a relationship between resistance to temptation and level of moral development as assessed by the Kohlberg Interview.¹ A principal purpose of the present inquiry was to re-examine that relationship.

Kohlberg² has described six stages in the development of moral thought. At Stage 2, the individual organizes his moral judgments primarily about considerations of personal gain, and disregards legitimate expectations of other parties. At Stage 3 and beyond, he becomes progressively more attentive to the expectations and rights of others. Accordingly, it was hypothesized that subjects at Stage 3 and above would be more likely to resist temptation to cheat in a "ray-gun" game than would those at Stages 1 and 2.

Subjects consisted of 68 boys from Potsdam Central and eight from St. Mary's School of Potsdam, New York. Ages ranged from 13.0 to 14.3 years with a mean of 13.6. *IQ* range was 95-134 with a mean of 112.

Each subject was instructed to press a button at the exact moment a target came into position, whereupon his score for that shot flashed on a screen. Individual scores ranged from 1 to 5, 5 signifying a direct hit. Each subject took two series of 20 shots. He was told at the end of the first series, the practice run, that he was now on his own and if he received a score of 77 or better he would get a five-dollar mechanical pencil. The experimenter then left the room. In no case was it possible to receive a total score of 77. Individual scores were preprogramed and totals ranged from 69-74. A subject was viewed as having cheated when he recorded on his score sheet (which was later retrieved from the wastebasket) a figure for any given trial which was higher than the score appearing on the screen or when he turned in a total

* Received in the Editorial Office, Provincetown, Massachusetts, on September 27, 1971. Copyright, 1972, by The Journal Press.

¹ Schwartz, S. H., Feldman, K. A., Brown, M. E., & Heingartner, A. Some personality correlates of conduct in two situations of moral conflict. *J. Personal.*, 1969, 37, 41-57.

² Kohlberg, L. The development of children's orientations toward a moral order: I. Sequence in the order of moral thought. *Vita Hum.*, 1963, 6, 11-33.

score higher than what he had actually received. Subjects then completed the Kohlberg Interview and the Cornell Parent Behavior Description.³

Fifty-one subjects scored at Stages 3 and 4 (the Conventional level) on Kohlberg's scale, and 25 at Stages 1 and 2 (the Premoral level). Nineteen subjects falsified their scores in the ray-gun game. There was no significant relationship between cheating and level of moral development. None of the dimensions of the Cornell Parent Behavior Description reliably differentiated between cheaters and noncheaters.

Conventional subjects, as against Premoral subjects, reported more "principled discipline" (which roughly translates into willingness by parents to explain parental policy) from both the mother ($t = 4.67, p < .001$) and the father ($t = 2.82, p < .01$). Conventional subjects perceived their mothers as having applied greater achievement demands ($t = 3.20, p < .01$) and their fathers as having been more strict ($t = 3.09, p < .01$) than was the case with Premoral boys.

*Department of Social Sciences
Clarkson College of Technology
Potsdam, New York 13676*

³ Devereux, E. C., Jr., Bronfenbrenner, U., & Suci, G. A. Patterns of parent behavior in America and West Germany: A cross-national comparison. *Internat. Soc. Sci. J.*, 1962, 16, 488-506.

CURRENT PROBLEMS AND RESOLUTIONS

Under this heading appear summaries of data which, in 500 words or less, would increase our comprehension of socially compelling problems, hopefully move us somewhat closer to a solution, and clearly show promise of transcending their own origin on the Zeitgeist; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

The Journal of Social Psychology, 1972, 88, 157-158.

I-E AND ORIENTATIONS TOWARD THE VIETNAM WAR* †

Department of Sociology, University of Missouri-Columbia

DONALD GRANBERG AND WILLIAM MAY

Only a few reports have related the personality dimension of internal *versus* external control of reinforcement (I-E) to social action.¹ Activists in civil rights groups were disproportionately internal,² and those willing to use violence were significantly external in beliefs.³

The present study related I-E to attitude and action orientations toward the Vietnam War. It was expected that an internal orientation would be related to dovish attitudes and actions, and that when attitudes were controlled, actions would vary inversely with degree of externality.

In April, 1971, a questionnaire was completed by 325 undergraduates in Sociology classes at the University of Missouri. Subjects evaluated the Vietnam War by use of eight adjective pairs in Semantic Differential format, checked which of 23 types of protest actions against the war they had done, and responded to 15 I-E items.

Overall, the sample was against the war on the attitude items, and checked

* Received in the Editorial Office, Provincetown, Massachusetts, on December 21, 1971. Copyright, 1972, by The Journal Press.

† This paper is based on an Honors thesis by William May, directed by Donald Granberg. The Questionnaire and a more extensive report are available upon request from Donald Granberg, address at end of this article.

¹ Rotter, J. Generalized expectancies for internal versus external control of reinforcement. *Psychol. Monog.*, 1966, 80 (1, No. 609).

² Strickland, B. The prediction of social action from a dimension of internal-external control. *J. Soc. Psychol.*, 1965, 66, 353-358.

³ Ransford, H. Isolation, powerlessness, and violence: A study of attitudes and participation in the Watts Riot. *Amer. J. Sociol.*, 1968, 73, 581-591.

an average of 3.24 protest action items. The results did not support the predictions. A slight but significant trend was found for externality to be positively related to more dovish attitudes ($r = .12$) and to more protest actions ($r = .13$). Among freshmen, the largest year in school subsample, the corresponding correlations were .20 between externality and both attitudes and actions. While all four of these correlations are significant at the .05 level, the two externality-protest action correlations are reduced to nonsignificance when attitudes are controlled by partial correlation.

A multiple regression produced an R of .66 with eight independent variables and the number of protest actions as the dependent variable, accounting for 43 percent of the variance. However, only four of the independent variables contributed significantly to variations in the dependent variable: attitudes toward the war (.39), year in school (.21), authoritarianism ($-.20$), and religiosity ($-.16$). I-E, subjective social class, sex, and dogmatism were not significantly related to number of protest acts in this analysis.

These findings caution against the generalization that social action efforts will be comprised of people with internal beliefs. The composition of the antiwar movement may have changed over the course of the war, and the beliefs of people, active in the movement throughout the war, may have changed in the direction of externality. Under some circumstances, it may be appropriate to conceive of I-E as the dependent rather than as an independent variable.

An important feature of the present study is that it was done relatively late in the war, and the antiwar movement had been operating for several years. Had the study been done in 1965, during the formative stages of the antiwar protest, different results may have been obtained, as one sensed strong feelings of efficacy among protesters at that time. It seems plausible to hypothesize that internals will be disproportionately present in the early stages of a conventional, reform-oriented social movement which has an assumption of the responsiveness of the social system.

Department of Sociology
University of Missouri
Columbia, Missouri 65201

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Abstracts	<i>Abst.</i>	Journal	<i>J.</i>
American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
Educational	<i>Educ.</i>	School	<i>Sch.</i>
Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
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- Attitude conflict, GSR, and traditional-modern attitude change among Hong Kong Chinese 163
BY JOHN L. M. DAWSON, RICHARD E. WHITNEY,
AND RAYMOND TAK-SAN LAU
- Effects of locus of control on choice shift in a cross-cultural perspective . . . 177
BY JAI B. P. SINHA AND S. M. ANWAR YUSUF
- Development and validation of the Henderson Environmental Learning Process Scale 185
BY RONALD W. HENDERSON, JOHN R. BERGAN, AND MAURE HUNT, JR.
- A methodological comment on Page's "role of demand awareness in the communicator credibility effect" 197
BY RICHARD L. BALE
- Statistical tests of significance and the significance of psychological data: A reply to Bale 203
BY MONTE M. PAGE
- Presidential preferences and freedom-equality value patterns in the 1968 American campaign 207
BY GEORGE F. BISHOP, ANDREW M. BARCLAY, AND MILTON ROKEACH
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Perception of emotion: The role of race, sex, and presentation mode . . .	213
BY A. GEORGE GITTER, NICHOLAS J. KOZEL, AND DAVID T. MOSTOFSKY	
Prestige of a harm-doer and subjective estimations of possible harm . . .	223
BY ROBERT C. BROWN, JR., BARRY R. SCHLENKER, AND JAMES T. TEDESCHI	
The effects of variations in evaluativeness of traits on the relation between stimulus affect and cognitive complexity	233
BY J. W. SHEPHERD	
Attitude-belief and attitude-behavior consistency	241
BY WILLIAM H. BRUVOLD	
Empathy and communication efficiency	247
BY EUGENE WEINSTEIN, KENNETH A. FELDMAN, NORMAN GOODMAN, AND MARTIN MARKOWITZ	
The effect of incredulity upon evaluation of the source of a communication . .	255
BY RAMON J. RHINE AND ROBERT M. KAPLAN	
A field experiment on the effect of political and cultural factors on the use of personal space	267
BY STEPHEN THAYER AND LEWIS ALBAN	
Race and sex in the communication of emotion	273
BY A. GEORGE GITTER, HARVEY BLACK, AND DAVID MOSTOFSKY	
Reported activation and verbal learning as a function of group size (social facilitation) and anxiety-inducing instructions	277
BY ROBERT E. THAYER AND LOUIS E. MOORE	
Self-referent accuracy in self-analytic groups	289
BY JOSEPH H. PLECK	
REPLICATIONS AND REFINEMENTS	
Locus of control and creativity in black and white children	297
BY JOSEPH DUCETTE, STEPHEN WOLK, AND SARAH FRIEDMAN	
The <i>N</i> and the out: Additional information on participants in psychological experiments	299
BY JACK A. NOTTINGHAM	
Feelings toward a frustrating agent as affected by replies to correction . .	301
BY MORTON GOLDMAN, JOHN G. KRETSCHMANN, AND NELLE WESTERGARD	
Eye contact and the human movement inkblot response	303
BY HERBERT M. LEFCOURT, MELANIE S. TELEGI, DONNA WILLOWS, AND BARBARA BUCKSPAN	
Territorial Markers: Additional findings	305
BY RONALD A. HOPPE, MICHAEL S. GREENE, AND JACK W. KENNY	
The validation of attractiveness judgments as an indirect index of social attitude	307
BY JACK M. HICKS	
Prior information and attitude change: A replication failure	309
BY JOHN C. TOUHEY AND TRACY L. VEACH	
BOOKS RECENTLY RECEIVED	311

ATTITUDE CONFLICT, GSR, AND TRADITIONAL-MODERN ATTITUDE CHANGE AMONG HONG KONG CHINESE*^{1 2}

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and University of Hong Kong*

JOHN L. M. DAWSON, RICHARD E. WHITNEY,
AND RAYMOND TAK-SAN LAU

A. INTRODUCTION

According to Dawson's Traditional-Modern (T-M) theory of attitude change (7, 8, 9), individuals in rapidly changing societies experience tension-arousing conflict between traditional and modern beliefs and are motivated to reduce both the attitude conflict and the corresponding tension either by the development of compromise attitudes, semimodern or semitraditional, or by alternative means of inconsistency-reduction.

Many theories of cognitive consistency make the same assumption as T-M theory: that inconsistent cognitions are sources of tension and motivate inconsistency-reducing responses (10, 14, 15). However, Dawson's T-M theory also relates the attitude change process to sociocultural variables and allows specific predictions regarding the type, extent, and selectivity of attitude change. T-M theory assumes that susceptibility to traditional-modern attitude change is determined by (a) the amount and type of contact with modern attitudes; (b) the cultural importance of the attitude topic; (c) the presence or absence of centralized, indigenous authority systems; (d) the degree of severity of childhood socialization; (e) individual tolerance for cognitive inconsistency.

Formal authority systems and harsh childhood socialization are assumed to enhance susceptibility to modern change by producing individuals intolerant of inconsistencies; given contact with new beliefs, this intolerance for inconsistency then leads to attitude change or some other inconsistency-reducing response. For example, Chinese agricultural society's harsh socialization and

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encouragement of conformity may be contrasted with the permissive socialization and encouragement of independence of Eskimo and African hunting societies (9); according to T-M theory, the former produces individuals less tolerant of inconsistency and highly susceptible to social influence, while the latter breeds more tolerance of inconsistency and less susceptibility to social influence.

In cultures that stress social conformity, reference groups, such as peers, family, and clans, are important sources of information and opinions. As such, they may be conceived of as attitude-reinforcing agents: by either reaffirming traditional attitudes or supporting modern ideas, they provide an individual with the means of reducing the cognitive inconsistencies and anxiety resulting from his encounters with new ideas.

Among university students, peers constitute a particularly important reference group. That Hong Kong Chinese students find attitude discrepancy between peers to be an unpleasant experience was demonstrated in a study by Whitney (18) where Hong Kong University students evaluated hypothetical social situations presented as short stories. Situations involving disagreement between friends were rated extremely unpleasant.

While attitude discrepancy from peers or other reference groups may be generally unpleasant, T-M theory assumes that the degrees of unpleasantness and the likelihood of attitude change depend on the *importance* of the belief involved. T-M theory predicts that the most important cultural beliefs initially resist modern change and, in situations of rapid social change, are more likely to be associated with unresolved attitude conflict than are less important beliefs. Moreover, while individuals encountering discrepant attitudes from respected sources may subjectively devalue the importance of the belief involved, such devaluation of importance is assumed to be quite difficult when the beliefs involved are basic tenets of one's traditional culture.

In Chinese society, as in other societies that stress social conformity, resistance to modern change on important topics may be overcome when one's peers encourage change. It is assumed that attitude change in such cases is reinforced by the decreased anxiety an individual experiences following the reduction of both traditional-modern attitude conflict and the attitude discrepancy between himself and his peers.

The present study was designed to investigate the relationship between traditional-modern attitude conflict, anxiety, and attitude change that reduces discrepancy from one's peers. Though T-M theory, as do most cognitive consistency theories, assumes that anxiety is increased by both disagreement with respect sources and contradictions within one's set of beliefs, experi-

mental evidence is ambiguous regarding the relationship between tension and either form of cognitive inconsistency. While conflict *per se* seems to be associated with greater GSR (2), as does attitude discrepancy (5, 17), Cronkhite (5) argues that there is inadequate experimental support for the general assumption that cognitive "dissonance" produces arousal; there is a suggestion that this is due to the fact that most of the relevant studies have included additional, confounding sources of arousal, such as defending one's position (4, 13) or concern about one's abilities (1, 11).

The literature is even more inconclusive as regards the assumption that inconsistency-reduction—e.g., via attitude change—leads to decreased arousal (1, 3, 5, 11, 12, 17). One reason for the divergence of the results of these studies may be that most failed to measure arousal separately for (a) the period between the encounter of inconsistencies and the resulting attitude response (during this period arousal should increase and lead to attitude change); (b) the period immediately following the attitude response (here arousal should decrease if attitude change has reduced discrepancy or other forms of inconsistency, but arousal may also increase due to postdecisional conflict or what Festinger (10) calls "postdecisional regret").

In the two experiments of the present study, the relationship of GSR arousal to cognitive inconsistency and attitude change was studied separately for the pre- and postattitude response periods. In addition, Ss were not required to defend their positions, nor was any test of ability involved.

B. HYPOTHESES

1. *Experiment I*

Hypothesis 1a: the greater the importance of a belief, the greater the degree of unresolved traditional-modern attitude conflict.

Hypothesis 1b: given attitude discrepancy from one's peers, discrepancy-reducing attitude change is positively related to prechange anxiety on beliefs that are important and associated with unresolved attitude conflict.

Hypothesis 1c: when attitude change towards one's peers is directly associated with prechange anxiety, the attitude change results in decreased traditional-modern attitude conflict.

2. *Experiment II*

No hypotheses were made in Experiment I about the relationship of postdecisional anxiety to attitude change, since it was assumed that such anxiety would be low when attitude change has reduced discrepancy from peers, but high when S experiences postdecisional regret. The joint occurrence of these

opposite arousal tendencies would result in no consistent relationship between attitude change and postdecision anxiety. However, certain results in Experiment I suggested that discrepancy-reducing attitude change is related to postresponse anxiety when the attitude change produces postdecisional conflict. This occurred most often when peer communications on *unimportant* topics were in a *traditional* direction: since T-M theory maintains that unimportant beliefs are more prone to change in a modern direction, it was assumed that conformity to peer discrepancy in a traditional direction on these unimportant beliefs produces postresponse conflict and anxiety. A second experiment tested this interpretation.

Hypotheses 2a, 2b: reversing peer discrepancy on unimportant beliefs from traditional to modern reduces both (a) *post-decision* arousal and (b) the relationship between *postdecision* arousal and attitude change.

C. METHOD

1. Subjects

a. *Experiment I.* The entire class of 27 first-year mechanical engineering students from Hong Kong University were paid U.S. \$1.75 (HK \$10) for participating in a 1½ hour experiment advertised as an investigation of reactions to attitude statements. All Ss were Chinese males and spoke both English and Cantonese. They had been classmates for most of the university year. Their mean age was 19.6 years.

b. *Experiment II.* A second sample of 17 students from a first-year Social Sciences class at Hong Kong University, identical in age, sex, and bilinguality to the first sample, was recruited under the same conditions.

2. GSR Equipment

GSR was measured with the TKK Group Multitude or Individual PGR No. 704, which employs nickel-plated finger electrodes. Since a condenser coupled circuit was available, only frequency GSRs were recorded (pilot studies indicated no differences between frequency and magnitude GSRs for the variables under consideration). The circuit was constant current of 30 mA when connected with 500 K \pm 1%. The main voltage was 210 V at 50 c/s D.C., H.T. 55 volts. A safety circuit allows changes in power source to be adjusted by hand. Sensitivity: approximately 20 mm for change of 1K at the time of measurement. Room temperature and humidity were controlled by an air conditioner and humidifier so that all Ss were adapted to constant environmental conditions.

3. Attitude Scales

Premeasures of traditional-modern attitudes and attitude conflict on the 30 topics to be used in the experimental communication were obtained with the Dawson T-M Scale, Chinese version. Different versions of the T-M Attitude Scales have been developed and tested in several field studies in West Africa, Australia, and Hong Kong (6, 8, 9). Details of the construction and validation of the Chinese version may be found in Dawson, Law, Leung, and Whitney (9), together with the initial findings obtained from its research application in Hong Kong. There are both Chinese and English translations. The scale consists of 30 culturally representative concepts, each defined by four separate attitude statements: Traditional, Semi-Traditional, Semi-Modern, and Modern. Opposite each of these items is a response scale ranging from Agree Strongly, Agree, Not Sure, Disagree, to Disagree Strongly. *S*'s responses on all four attitude statements are combined to give a highly reliable measure of the traditional/modern nature of his attitudes on each of the 30 different concepts. In addition, a measure of unresolved attitude conflict is obtained for each of the 30 concepts by recording all internally inconsistent responses: e.g., agreeing with both the Traditional and Modern statements. Response set does not confound this measure of attitude conflict (9).

4. Procedure

a. Experiment I. All *S*s had filled out the T-M Scale six months prior to the actual experiment. *S*'s first task in the present experiment was to complete the T-M Scale again (Chinese translation), both to check against change occurring since the last administration of the Scale and to provide a base line for measuring any attitude change occurring during the experiment. After *S* completed the T-M Scale and a brief autobiographical questionnaire, he was reminded by *E* that he and his classmates had filled out the T-M Scale six months previously (*E* held up the T-M Scale and most *S*s nodded in agreement). *E* then explained that the average response of *S*'s classmates on each item had been calculated and circled in red ink on a series of slides that *S* would now be shown. *E* mentioned that *S*s sometimes changed their responses in one direction or another and sometimes not at all, but that it made no difference to *E* what *S* chose to do: he was merely to study each slide and then indicate his attitude by pushing one of five buttons at his fingertips (marked from Agree Strongly to Disagree Strongly, as occurred on the T-M Scale and the slides).

In fact, the "average responses" circled on the slides were arbitrarily selected

by the investigators, such that peer group discrepancy in the form of fictitious norms could be applied for half of the 30 T-M Scale concepts in a traditional direction and half in a modern direction.

E then attached the GSR finger electrodes to *S*'s left hand and strapped his wrist to the table, asking *S* not to move during the experiment and explaining that the equipment was merely to check for fatigue or body temperature which could influence *S*'s judgment of the slides. *E* then asked if *S* had any questions (*S*s asked only a few questions, always answerable by repeating part of the Instructions).

The lights were turned off and five minutes were allowed for *S* to relax. When a steady GSR pattern was obtained, *S* was shown the 120 slides (four slides for each of the 30 T-M Scale concepts). *S*'s response to each slide was flashed on a panel in front of *E*, who recorded it and immediately removed the slide. *E* then waited until the GSR returned to base level before presenting the next slide (always at least five seconds after *S*'s response). Less than 45 minutes were required for this part of the experiment, following which *S* rated the importance of each T-M Scale concept and evaluated his peers as sources of information on each concept. Five-point rating scales were used.

To check the reliability of the importance ratings, the same importance-rating scale was administered to independent samples of undergraduate males and females who had not participated in either of the present experiments.

b. Experiment II. The experimental procedure was identical with that of Experiment I, except that (a) only two of the 30 T-M concepts were used, concepts L and N in Table 1 (*cf.* Results); (b) peer group discrepancy on both concepts was reversed from that of Experiment I, this time applied in a modern, rather than traditional, direction. The two concepts were selected as representative of those concepts which, in Experiment I, were rated unimportant, were associated with peer discrepancy in a traditional direction, and had high correlations between attitude change and *postdecision* GSR.

D. RESULTS

1. *Experiment I*

Hypothesis 1a predicted that belief importance and T-M attitude conflict would be positively related. To test this prediction, the 30 T-M Scale concepts were halved on the basis of importance ratings. The 15 more important concepts have a mean importance rating of 2.3, significantly higher than that of the mean of 3.8 ($t = 19.380$, $p < .001$) of the low importance concepts. Hypothesis 1a is clearly confirmed: the level of T-M attitude conflict on

important concepts was significantly higher than on unimportant concepts ($\chi^2 = 32.643, p < .001$).

Since the above importance ratings were obtained *after* the experiment, it is possible that they were influenced by the experimental manipulations. To check the reliability of the present importance ratings, therefore, independent samples of *Ss* rated the importance of each T-M concept. The rank-order correlations between the present importance ratings and those of the other samples were $\rho = .922$ for male/male ($n = 27$) and $\rho = .927$ for male/female ($n = 27$). Hence the rank-order importance of T-M Scale concepts is highly reliable between different subject samples.

Hypotheses 1b and 1c referred to the relationship between predecision GSR and attitude change. To test these hypotheses, measures of GSR/attitude change correlations were developed for each of the 30 T-M concepts. First, attitude change scores were derived for each *S* by calculating the differences between his initial attitude and his response following the discrepant communication (76% of all attitude change was towards peers; since adjustment of attitude change scores to include change *away* from peers did not affect the results, all data are presented in terms of attitude change *toward* peers). These individual attitude change scores were then correlated with the frequency GSR both before and after *S*'s attitude response; this yielded two measures of the GSR/attitude change relationship on each of the 30 T-M concepts: correlation between attitude change and the frequency of GSR between the presentation of each slide and *S*'s attitude response (*pre*-GSR), and the correlation between this same attitude change and the frequency of GSR during the first five seconds after the attitude response (*post*-GSR). These two measures were then separately averaged over all *Ss* for each T-M concept and appear in Table 1 along with the direction, traditional or modern, of peer discrepancy. The concepts are rank-ordered in terms of the *pre*-GSR/attitude change correlations (67% of all *pre*-GSR correlations with attitude change were higher than the *post*-GSR correlations; the 33% in which *pre*-GSR correlations were *lower* than the *post*-GSR correlations are underlined in Table 1 and referred to in Experiment II, along with the effects of direction of peer discrepancy).

For purposes of analysis, these 30 *pre*-GSR/attitude change correlations have been halved. The mean *pre*-GSR/attitude change correlation for the top 15 concepts is significantly higher than the mean for the bottom half ($r = .44$ vs. $r = .14$). To test hypotheses 1b and 1c, these two groups of concepts were then compared in terms of belief importance, source evaluations, and T-M attitude conflict (TM UAC). The results appear in Table 2.

TABLE 1
CORRELATIONS BETWEEN ATTITUDE CHANGE AND GSR ON T-M SCALE CONCEPTS

	T-M Scale concept	Direction of peer discrepancy	Correlations: Attitude change &	
			pre-GSR	post-GSR
J.	China <i>vs.</i> Christian	M	.64	.30
BB	Humility	M	.59	.18
G	Traditional Scholars	M	.58	.54
Y	Respect for Age	M	.47	.29
E	Actors	T	.46	.03
S	Parental Discipline	M	.43	.02
AA	Wife's Virtue	T	.42	.30
DD	Obedience to Authority	T	.41	.32
A	Reduce Family Size	T	.41	.45 ^a
I	Work <i>vs.</i> Leisure	T	.40	.17
N	Widow Remarriage	T	.39	.60
R	Herbs <i>vs.</i> Modern Medicine	T	.37	.28
U	Polygamy	T	.36	.02
T	Male Dominance over Female	M	.36	.25
B	Mental Illness	M	.35	.60
	Mean		.44	.29
W	Farming <i>vs.</i> Business	M	.35	.31
K	Closing of Coffin	T	.30	.30
F	Lightning	M	.29	.21
H	Confucian Values	T	.26	.37
CC	Control of Temper	M	.19	.07
M	Attitude <i>tows.</i> Europeans	M	.19	.32
P	Concept of the Gift	M	.18	.09
Q	Bride-Price	M	.14	.20
Z	Chinese Traditions	M	.13	.16
C	Ghosts	T	.10	-.08
L	Dead Man's Soul	T	.09	.54
V	Chinese Customs	T	.03	.33
X	Education for Girls	T	.03	.19
O	Concept of "Liars"	T	-.01	-.09
D	Sons Better than Daughters	M	-.10	-.22
	Mean		.14	.18

Note: The letters in the left-hand column, from A through DD, identify the 30 Chinese cultural concepts that make up the T-M Scale.

^a Underlining is used to show those values where the pre-GSR correlations were lower than the post-GSR correlations.

TABLE 2
IMPORTANCE, SOURCE EVALUATION, AND LEVEL OF T-M ATTITUDE
CONFLICT WITH RESPECT TO GSR/ATTITUDE
CHANGE CORRELATIONS

Correlation: Att. change & pre-GSR	Importance (1 = High)	Source (1 = Low)	% T-M UAC	
			Pre-Exp.	Post-Exp.
High ($r = .44$)	2.6	3.0	32.5	27.2
Low ($r = .14$)	3.5	2.9	10.9	15.0

As expected, there are no significant differences between the top and bottom 15 concepts in source evaluation ($\bar{x} = 3.0$ vs. 2.9, n.s.), but the top 15 concepts were rated significantly more important than the bottom 15 ($\bar{x} = 2.6$ vs. 3.5, $t = 10.368$, $p < .001$) and associated with higher TM UAC both in S 's initial attitudes ($\bar{x} = 32.5\%$ vs. 10.9%, $\chi^2 = 44.001$, $p < .001$) and in their postexperimental attitudes ($\bar{x} = 27.2\%$ vs. 15.0%, $\chi^2 = 14.534$, $p < .001$). These data confirm hypothesis 1b: attitude change and pre-GSR were positively related on beliefs that were important and associated with unresolved attitude conflict.

Hypothesis 1c predicted that discrepancy-reducing attitude change that is associated with pre-attitude response anxiety would lead to decreased TM UAC. Siegel's Sign Test (16) was used to compare the changes in TM UAC on each concept within the two groups represented in Table 3. The results are in the direction hypothesized: a tendency towards *decreased* attitude conflict for the top 15 concepts ($p < .14$). In addition, there was a significant *increase* in TM UAC for the bottom 15 concepts ($p < .02$).

TABLE 3
EXPERIMENTS I AND II: EFFECTS OF DIRECTION OF PEER DISCREPANCY
ON PRE- AND POST-GSR, GSR/ATTITUDE CHANGE CORRELATIONS

Direction Peer discrepancy	Mean GSR Pre	Mean GSR Post	Correlation: Pre-GSR	Att. Change & post-GSR
Concept L:				
Exp. I T	5.7	8.9	.09	.54
Exp. II M	7.9	4.8	.22	-.10
Concept N:				
Exp. I T	6.2	8.4	.39	.60
Exp. II M	5.1	3.9	.06	-.09

Several internal analyses were carried out to check alternative explanations for the relationship between pre-GSR and attitude change. These data are not presented in the tables and will merely be summarized here. There was no significant difference between the two groups of concepts in the amounts of pre-GSR, attitude change, or discrepancy between S 's initial attitude and his peers' average response on the slides. Hence the differences between the two groups of concepts in pre-GSR/attitude change correlations cannot be attributed to differences in the amounts of discrepancy, pre-GSR, or attitude change.

In addition, the direction of peer discrepancy—traditional or modern—was not significantly related to any of the variables under consideration in Experiment I. However, inspection of the data suggested that the correlations between

attitude change and *post*-GSR were related to the combined effects of belief importance and direction of peer discrepancy. Since no hypotheses were made in Experiment I regarding *post*decision arousal, these data are discussed below in conjunction with the results of Experiment II.

2. Experiment II

Hypotheses 2a and 2b were suggested by the number of unexpected high correlations in Experiment I between attitude change and *post*decision GSR (*cf.* Table 1). Inspection of the data indicated that this occurred most often when peer discrepancy on unimportant beliefs was in a traditional direction. To test hypotheses 2a and 2b, measures were taken of mean GSR, pre- and post-decisional, and of GSR/attitude change correlations. The results for each of the two concepts used in Experiment II appear in Table 3, along with corresponding data from Experiment I. Both concepts yield essentially the same results.

Thus, in Experiment I, where peer group discrepancy was in a traditional direction, the pre-GSR means were *lower* than the post-GSR means for both concepts. In Experiment II, where peer group discrepancy was in a modern direction, the reverse occurs: pre-GSR is *higher* than post-GSR. This reversal is significant for both concept L ($p < .001$) and concept N ($p < .01$), thus confirming hypothesis 2a. The same basic pattern occurs in the correlations between attitude change and pre-GSR *vs.* post-GSR, thus confirming hypothesis 2b: reversal of peer discrepancy from traditional to modern on unimportant concepts reduces the post-GSR/attitude change correlation.

Since there were no significant differences in the importance rating and source evaluations between Experiments I and II, these data are not included in Table 3.

E. DISCUSSION

The results of the present study confirm the three hypotheses deduced from T-M theory. Also when *S* was faced with attitudinal discrepancy from his peers, attitude change toward those peers was significantly related to predecision GSR on important, high-conflict beliefs and unrelated to predecision GSR on unimportant, lower-conflict beliefs.

It was initially assumed that the pre-GSR which was correlated with attitude change on the more important, high-conflict beliefs was a result of two sources of cognitive inconsistency—unresolved attitude conflict and discrepancy from peers—and that anxiety associated with such inconsistency motivates attitude change. However, attitude conflict by itself may not neces-

sarily lead to either anxiety or anxiety-motivated attitude change: previous research (5) indicates that cognitive inconsistency is often an insufficient source of change-producing arousal; this was also indicated in the lack of differences in the present study between high- and low-conflict beliefs in total pre-GSR. Cognitive conflict in the form of conflicting attitudes may be unpleasant, but it does not seem to have been a major source of anxiety and only influenced the anxiety-attitude change relationship when it was combined with the additional cognitive inconsistency of discrepancy from peers. As regards the encounter of discrepancy from peers, this does seem to have been a major source of anxiety, but such anxiety was not related to discrepancy-reducing attitude change unless cognitive conflict is also present. In the present study, the discrepancy-arousal relationship by itself cannot account for the differences between beliefs in the pre-GSR/attitude change correlations, since there was no difference between the two groups of T-M concepts in the amount of discrepancy GSR, or attitude change.

Thus discrepancy-reducing attitude change was only related to anxiety when there was some degree of attitude conflict present; such attitude conflict, moreover, must be considered in terms of the level of conflict both before and after attitude change occurs. The present results indicated that attitude conflict that influenced the anxiety-attitude change relationship was itself a function of belief *importance* and the *direction* of peer discrepancy. Experiment I verified the T-M theory prediction that important beliefs are more likely to be associated with unresolved attitude conflict (TM UAC) than are less important beliefs. T-M theory assumes that this is because, given rapidly-changing societies, more important beliefs tend to resist modern change, while unimportant beliefs do not. The corollary of this assumption is that if an individual conforms to peer group discrepancy in a *traditional* direction on *unimportant* beliefs, he finds himself expressing attitudes that are contradictory to his usual tendency to adopt modern attitudes on such beliefs. This reasoning leads to the prediction that conformity to peer discrepancy in a traditional direction on unimportant beliefs produces *postdecisional* regret or conflict and *postdecision* arousal that is related to discrepancy-reducing attitude change. Experiment I suggested this line of reasoning by the high correlations between *post-GSR* and attitude change on unimportant concepts where peer discrepancy was in a traditional direction; Experiment II verified this reasoning with evidence that conformity to peer influence in a modern direction on unimportant concepts results in low *post-GSR* and little or no relationship between *post-GSR* and attitude change.

There was also some evidence in Experiment I that the potential increase

or decrease of attitude conflict may determine the relationship between pre-GSR and discrepancy-reducing attitude change. On those important, high-conflict concepts where pre-GSR and attitude change were correlated, attitude conflict (TM UAC) tended to *decrease* as a result of discrepancy-reducing attitude change; in contrast, TM UAC significantly *increased* on those concepts rated unimportant, initially low in attitude conflict, and lacking any consistent correlation between pre-GSR and attitude change. One possible interpretation of these data is that anxiety and attitude change are only related when an individual is initially in conflict over traditional-modern alternatives and seeks, through conformity to peers, to reduce such conflict. However, the data do not allow a causal interpretation—one can only speculate as to whether individuals do guide their attitude change in such a manner. Moreover, statistical regression artifacts may have accounted for the above changes in TM UAC, since the data for all 30 topics were split on a measure (the pre-GSR/attitude change correlation) which was itself correlated with TM UAC at the initial, pre-experimental testing ($\rho = .57$); regression towards the mean level of UAC for the two groups of topics at the second testing would result in decreased UAC for conflict concepts and increased UAC for nonconflict concepts.

The present findings highlight the advantage of T-M theory over other consistency theories of attitude change. All major consistency theories, and T-M theory as well, assume that attitude conflict and other forms of cognitive inconsistency are sources of change-producing tension (10, 14, 15). T-M theory differs, however, in that it bridges the gap between psychological variables (attitudes, attitude conflict, and tension) and sociocultural variables (social structure, socialization, and social change). Since the measuring instrument (TM Scale) assesses traditional-modern attitude conflict and attitude change on concepts highly relevant to indigenous culture (here Chinese), experimental results may be directly translated into concrete, culturally-meaningful statements about the sociocultural influences on psychological processes, particularly those relevant to rapid social change. In the present study, cognitive conflict was shown to be the major variable explaining the relationship between anxiety and attitude change. These results may then be interpreted in terms of sociocultural influences on tolerance for cognitive conflict. In the present case, T-M theory attributes low tolerance for inconsistent cognitions to the Chinese society's strict childhood socialization and stress on social conformity (9). Hence among Hong Kong Chinese, the encounter with discrepant attitudes leads to attitude conformity; but such

discrepancy-reducing attitude change is only related to anxiety when cognitive conflict is high.

F. SUMMARY

Predictions from Dawson's Traditional-Modern consistency theory of attitude change (7, 8, 9) were tested in a laboratory experiment with Hong Kong Chinese students. A premeasure of attitudes and attitude conflict on topics of traditional Chinese culture was followed by a discrepant communication which informed *S* of his peers' average opinion on these same topics. GSR was measured before and after *S*s responded to the communication, following which *S*s rated the importance of the topics and evaluated peers as sources of information. As predicted, (a) belief importance was significantly related to the level of traditional-modern attitude conflict; (b) attitude change which reduced the discrepancy between *S* and peers was significantly correlated with pre-GSR when attitude conflict and belief importance were high; when attitude conflict and belief importance were low, no such relationship emerged. The results also indicated a nonsignificant tendency towards reduced attitude conflict when attitude change was correlated with pre-GSR. A second experiment reversed peer group discrepancy on unimportant beliefs from traditional to modern; as expected, this led to reduced post-GSR and reduced post-GSR/attitude change correlations.

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Department of Psychology
University of Hong Kong
Hong Kong

EFFECTS OF LOCUS OF CONTROL ON CHOICE SHIFT IN A CROSS-CULTURAL PERSPECTIVE*¹

A. N. S. Institute of Social Studies, Patna, India

JAI B. P. SINHA² AND S. M. ANWAR YUSUF

A. INTRODUCTION

While a very recent special issue of the *Journal of Personality and Social Psychology* (December, 1971) records a respectable number of studies suggesting that groups take more risk than individuals, it also reveals the absence of any conclusive interpretation of what leads to such a shift. The search thus continues. One interpretation not cited in the above, but holding some promise, is subsumed under the *locus of control* hypothesis (6). Rettig maintains that shifts are produced "because the individual transfers the control over his outcome to the group" (7, p. 1). He further suggests that the specific condition that helps an individual shift his control is the amount of trust he experiences in a group setting. If group members are positively reinforcing by helping the individual (e.g., bringing up relevant information, supporting his ideas, etc.), then the individual is more likely to shift his control. On the other hand, a climate of distrust will interfere with this process.

An additional factor affecting the transfer of control, but not incorporated in the above studies, is the perception of competency. An individual is more likely to delegate decisions over his outcomes to a group if the group is perceived to be competent. Groups may be varied on the basis of competency, as well as trust. The factorial design thus evolved might throw some light on the relative contributions of the two sources.

The locus of control hypothesis does not predetermine the direction of the choice shift. Once control is transferred to a group, the dominant value climate of the group is expected to determine whether the shift will take a risky or a cautious turn (7). According to the value theories, "groups shift in the direction toward which most members of the group are already at-

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² Presently at Hunter College of the City University of New York.

tracted as individuals" (5, p. 344). Individuals who belong to a society where risk is valued will take greater risks when in a group. However, in underdeveloped societies, such as India, where risk taking is discouraged (2), groups may be more cautious than individuals except for those instances in which group norms are formed independently of broad cultural values. For example, if a group is experimentally composed mostly of high risk takers, there may exist a climate conducive to risky shift, despite the broad cultural framework favoring a caution.

Value theories also have implications for different types of risky behavior. In the case of ethical risk, the consequences may involve severe social censure, especially in countries, such as India, where heavy emphasis is placed on morality. On the other hand, if the risk is ethically neutral, risk taking followed by failure is more likely to be tolerated. The differential reactions thus are expected to result in relatively more cautious shift in ethical risk taking than in the nonethical risk taking.

In summary, it is expected that Indian groups composed of members who are initially high risk takers will display risky shifts, whereas groups composed of initially cautious individuals will show more caution. The two types of groups when combined will reveal that Indian groups shift toward more caution. The amount of shift will vary as a function of the magnitude of trust and competency in the group, as well as the type of risk involved. Under the conditions of higher trust and/or high competency, the shift will be more pronounced. Similarly, groups will show more risky shift in ethically neutral than in unethical risk taking.

B. METHOD

1. *Measure of Risk Taking*

The two scales most often employed to measure risk taking are (a) the Choice Dilemma Questionnaire, CDQ (3), and (b) the Behavior Prediction Scale, BPS (8). The CDQ consists of 12 decision problems, each of which portrays a hypothetical person about to choose an attractive yet uncertain path. The lower the level of probability of success at which he is advised to opt for the attractive alternative, the more risk a subject is assumed to be taking. Various studies have found that groups are more risky than individuals on 10 out of 12 items of the questionnaire. Of these only four items—1, 4, 7, and 11—were selected because of their high relevance to the Indian setting. These items were translated into Hindi.

The BPS is a multidimensional scale consisting of 16 items—each por-

traying an hypothetical person in conflict about stealing money from a bank. The stealing is assumed to be determined by the various combinations of the high and low levels of the following four factors: expectancy of gain, reinforcement value of gain, expectancy of censure, and reinforcement value of censure. Ss are asked to predict on a six-point scale ranging from zero (definitely no) to 6 (definitely yes) whether the hypothetical person will take the money from the bank. The higher the predicted chance of his stealing, the greater the risk.

While both scales tend to measure risk taking, there are basic differences in the type of risk and in the consequences. The CDQ involves risk that has been found to be socially desirable and, hence, failure is not likely to be socially disapproved. The BPS varies unethical behavior (stealing), and failure (getting caught) is likely to meet social censure.

2. Subjects

Ss consisted of 212 undergraduates of Patna University (India) who volunteered for the first phase of the study. They came singly to the laboratory and were individually administered the CDQ and BPS. The order in which Ss took the scales was counterbalanced. Forty-eight high risk takers (on the basis of their highest scores on BPS and CDQ) and 48 low risk takers (having lowest scores) were selected for the second phase of the study and were arranged into 16 three-man risky groups and 16 three-man cautious groups. A risky group consisted of two high and one low risk taker. Similarly, a cautious group was composed of two low and one high risk taker. The groups were randomly assigned to the four treatment conditions.

3. Experimental Manipulations

The factorial design consisted of two levels of *Trust* (i.e., help and hinder) and two levels of *Competence* (high and low) with four risky and four cautious groups assigned to each condition.

The *help* and *hinder* instructions were similar to those given by Rettig (6). In the *help* condition, Ss were instructed to cooperate with and support each other by bringing out relevant information and by trusting each other. In the *hinder* condition, they were instructed to be critical of each other.

The high and low levels of competence were induced by using differential feedback. In the condition of *high competence*, Ss were told that their previous scores on the two questionnaires indicated that they were above average in capacity to make correct decisions in problematic situations. The Ss in the *low competence* condition were informed that they were below average.

4. Procedure

Ss were seated around a 3×5 foot table and were assigned letters for subsequent identification. The groups were given one of the instructions in accordance with the four previously described conditions: *high competence-trust*, *high competence-hinder*, *low competence-trust*, and *low competence-hinder*, followed by further instructions in which Ss were asked to discuss each item of CDQ and BPS and to come to a group's consensus for each of them.

C. RESULTS

As a result of unexpected technical difficulties (early summer vacation at Patna University) only 26 groups could be run. Of the eight conditions, *high competency-help* and *high competency-hinder* had four risky groups in each. The remaining six conditions had three groups in each. The results are thus based on the analysis of 26 groups.

The main dependent variable was the direction and the magnitude of shift from the individual to the group condition. A cursory view of the individuals' mean response and group consensus revealed an overall picture of risky shift on CDQ, as well as BPS. Only three of the groups showed cautious shift on CDQ and only four on BPS. Hence, the hypothesis that Indian Ss when in groups are more cautious than when they are alone was not substantiated.

Analysis of variance revealed that the "competency" manipulation was highly significant for the risky shift on BPS ($F = 22.49$; $df = 1, 18$; $p < .01$), as well as on CDQ ($F = 8.53$; $df = 1, 18$; $p < .01$). Table 1 displayed the mean scores. In the high competency condition, the groups became more risky on the CDQ, as well as on BPS. The factor of trust was mildly significant for the risky shift on BPS ($F = 5.09$; $df = 1, 18$; $p < .05$). Under the condition of *help*, groups shifted more than under the hinder condition (see Table 1). On the CDQ scores, the trend, although statistically insignificant ($F = 2.79$; $df = 1, 18$; $p = >.10$), was found to be in the expected direction. The effect of the groups being either risky or cautious was significant only for the risky shift on the BPS where risky groups shifted less than the cautious ones ($F = 15.58$; $df = 1, 18$; $p < .01$). None of the interactions was significant for any of the measures of risky shift.

The risky shifts on the two instruments for these preselected Ss—CDQ and BPS—were significantly correlated ($r = .68$; $df = 24$, $p < .05$). The relationship between initial dispersion in Ss' risk taking and their subsequent risky shift in the group condition was examined through a product-moment

TABLE 1
MEAN SCORES ON BPS AND CDQ

Factors	BPS	CDQ
Competency		
high	22.33	7.99
low	7.16	2.43
Trust		
help	19.92	6.71
hinder	11.82	4.14
Value		
risky	9.85	2.30
cautious	22.83	6.74

correlation between the risky shift and the sums of intragroup deviation scores based on group members' individual responses during first administration. It was found to be .12 ($df = 76$, $p < .05$) for CDQ and .09 ($df = 76$, $p < .05$) for the BPS.

Contingency tables were developed in order to explore if high initial risk takers in very risky shift groups (above median scores) were recognized more often as influential persons or leaders than in the low shift group (below median). None of the chi squares was significant.

D. DISCUSSION AND CONCLUSION

Rettig's (6) contention that the presence of "trust" facilitates the transfer of control over decision making from individuals to the group has been supported for unethical risk taking. But what seems to have been more effective for the locus of control hypothesis is that perceived competence of the groups accounted for the greater amount of variance in the risky shift on both BPS and CDQ. That is, when groups were made to feel competent in making decisions, they took riskier positions. Probably, the feedback of competence induced greater confidence and thus has reinforcing properties similar to those contained in trust. Competence, however, seems to consist of predominantly cognitive components, whereas trust may be predominantly affective in nature. This difference in their composition may be a reason why trust was significant only in unethical risk taking where the consequence may be especially embarrassing, while competence proved to be effective in both types of risk taking.

The "risk" climate does not seem to be a particularly important factor for the choice shift. Indians when in groups appear to be no more cautious than when alone. There is some evidence (significant at $p < .01$) that the

initially cautious individuals while in groups shift more than initially high risk takers. In fact, initially cautious Ss, regardless of the experimental manipulations or whether they were in majority or minority in a group, shifted more than the initially risky ones on BPS (\bar{X} for cautious = 39.42 and for risky = 7.48), as well as on CDQ (\bar{X} for cautious = 13.11 and for risky = .31).

The leadership theory (1, 4) of risky shift did not seem to be supported in the present study, as the high risky shift groups did not identify high risk takers as the most influential members of the group. Nor was the interpretation that heterogeneity among the risk takers leads to risky shift (9) substantiated.

It may, therefore, be concluded that individuals did transfer their control over decision making to their groups; and that groups tended to take riskier positions regardless of the nature of cultural background or the types of risk involved. The two mechanisms found to help transfer this locus of control appeared to be trust and competence experienced in the group setting.

E. SUMMARY

Two hundred twelve undergraduates of Patna University (India) were individually administered the Behavior Prediction Scale (8) and items 1, 4, 7, and 11 of the Choice Dilemma Questionnaire (3). On the basis of their scores, high and low risk takers were selected to constitute three-person groups. Twelve cautious groups, consisting of two low and one high risk takers, and 14 risky groups, consisting of two high and one low risk taker, were run. The groups were assigned to a factorial design in which two levels of competence (high and low) and two conditions of trust (help and hinder) were experimentally manipulated. The groups discussed the two questionnaires and provided group consensus to each item. The difference between the average of the individuals' initial response and the group consensus provided a score of risky shift.

Results indicated that Indian groups shifted toward more risky positions. Competence facilitated the shift on both scales, while trust was found significant only for unethical risky shift. The findings were interpreted to support Rettig's locus of control hypothesis in a country that is culturally different from the U.S.A.

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Department of Psychology

Hunter College

of The City University of New York

695 Park Avenue

New York, New York 10021



DEVELOPMENT AND VALIDATION OF THE HENDERSON ENVIRONMENTAL LEARNING PROCESS SCALE*¹

Arizona Center for Early Childhood Education, University of Arizona

RONALD W. HENDERSON, JOHN R. BERGAN, AND MAURE HURT, JR.²

A. INTRODUCTION

Much of the interest in early childhood education during the past decade had been stimulated by evidence that the nature of a child's early experiences may markedly influence the development of his intellectual competence, at least as competence is related to the learning of school subjects and performance on standardized intelligence tests. In large measure, intervention programs for young children from economically impoverished backgrounds have been justified on the basis of Hunt's (13) reinterpretation of data bearing on the relationships between experience and intellectual development, and Bloom's (4) analysis of factors influencing stability and change in human intellectual performance. Many intervention programs have intended to "compensate" for experiences presumed to be missing in the backgrounds of children from "disadvantaged" backgrounds by designing preschool and primary grade programs to deal with the problem of the "match" (13) between the child's background of experience and the design of instructional procedures and content to be provided in the school or preschool. Other educators have attempted to broaden the base of intervention by working simultaneously in the classroom and with parents in the home (1, 6, 7, 20).

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While some intervention programs appear to be successful, at least over short periods of time, long term effects have been much more difficult to demonstrate, and reviews of research on intervention efforts have generally presented inconclusive or unenthusiastic conclusions regarding the effectiveness of compensatory programs (12, 17).

There are numerous research and application questions that remain unanswered with regard to the underlying difficulties in obtaining lasting effects of some practical significance from intervention efforts. These issues cannot be reviewed here, but certainly one significant gap in the knowledge base that must be used to generate programs and practices has to do with the identification of environmental factors that are related to successful performance on criterion measures of intellectual performance. This is a relatively new area of research in the behavioral sciences, and as yet, little is known about those patterns of parent behavior that may have critical effects on the development of intellectual competence in children. There is a need to identify categories of parent behavior that are related to child performance, and to develop strategies for the testing of hypotheses generated by the data from such investigations.

The existing body of knowledge concerning relationships between socialization practices and child performance, on the one hand, and measures of intelligence or school achievement, on the other hand, have not been especially useful in guiding the development of intervention strategies. Much of the literature on social-class differences in socialization patterns is descriptive in nature (22) and focuses primarily upon such categories as patterns of authority and power, emotional adjustment, and a variety of variables suggested by psychoanalytic theory: for example, toilet training and weaning practices. Some attempts have been made to identify relationships between parent behaviors and children's language and cognitive development (3, 11), but most investigations have focused upon relationships between gross socialization variables and performance measures. The most common variable in such research is some measure of socioeconomic status (14, 15). Lavin (14) has asserted that an index of socioeconomic status (SES) is capable of predicting school performance because it is a summarizing variable subsuming a variety of values, attitudes, and motivations related to academic performance.

It is quite true that socioeconomic status is a summarizing variable, and it is precisely for this reason that the usefulness of SES measures is limited for those who would plan and implement programs for the education of economically disadvantaged children. Because SES measures are so gross and undifferentiated, they may well obscure more than they reveal. As a result, they provide no guidance for the design of programs to compensate for debilitating

environments, nor to build upon the advantages provided by facilitating environments. The knowledge needed for these purposes must relate to what happens, or fails to happen, in the home and community environments of children who are ill equipped to cope with school programs as they exist.

One line of research that may lead to the identification of environmental factors that affect the development of young children is the work of Maxine and Phil Schoggen (16), who have conducted ecological investigations to identify environmental force units in the home. Another line of investigation has grown out of the work of Davé and Wolf, who demonstrated substantial relationships between their environmental process variables and measured intelligence (21) and academic achievement (5). Building upon the work of these investigators, Henderson and Merritt (10) demonstrated that the kinds of environmental variables identified by Davé and Wolf are capable of making sharp discriminations between the families of disadvantaged Mexican-American children who perform relatively well or poorly on intellectual measures, and that for these same children, environmental measures for achievement press, language models, academic guidance, activeness of family, intellectuality in the home, identification with models, range of social interaction, and perception of the practical value of education predict achievement over their first three years in school (9).

Existing environmental measures (5, 10, 21) have produced data that have been useful in the design of parent training programs (8). However, existing measures have several limitations which make them impractical for wide scale use for the purposes of identifying differences and similarities among different ethnic groups or among different levels of socioeconomic status within ethnic groups. Among the limitations of these measures are the requirement for highly skilled interviewers for data collection, and the fact that the interviews and rating procedures required to quantify the results are time consuming and expensive.

The major purpose of the present study was to go beyond our previous research on environmental influences on the intellectual performance of young children by developing an interview schedule designed (a) to provide measures of educationally relevant variables in the home that would be subject to change through intervention programs in the school and in the home, and (b) to validate these variables as predictors of intellectual performance. It was hypothesized that the variables of aspiration, environmental stimulation, parental guidance, models, and reinforcement would be significantly related to criterion measures of school achievement.

B. METHOD

1. *Subjects*

The subjects in this study were 60 lower SES Mexican-American first graders and 66 middle SES Anglo-American first graders from three public schools in Tucson, Arizona.

2. *Procedure*

The Henderson Environmental Learning Process Scale (HELPS) was administered to mothers of all children in the samples. Both Spanish and English forms of the instruments were available, and the interviews were conducted in the language of choice of the respondents. All interviewers for the Mexican-American mothers were bilingual and were native speakers of Spanish. Anglo-American mothers were interviewed by Anglo-Americans. After introducing herself, the interviewer informed the respondent of the purpose of the interview by saying,

I am helping workers at the Arizona Center for Early Childhood Education at the University of Arizona by getting some information that may help to develop better educational programs. We are especially interested in knowing more about the experiences that young children and their families have in different kinds of communities. The people in the Early Childhood Center hope that such information will make it possible for them to help the schools in many regions of the country to improve their programs.

Informants were given instructions regarding the nature of the questions and the manner in which they were to respond. Upon completion of sample items, the respondents were asked if they understood how they were to respond to the questions, and in cases of uncertainty, further instruction was given before the interviewer proceeded with the questionnaire items.

The procedure for the interview was designed to make it possible for the mother to mark her responses directly on the interview form, and at the same time to avoid embarrassment for respondents who might not be able to read the items. The interview was conducted with an interview schedule placed directly in front of both the interviewer and the respondent. The interviewer indicated that she would read each item aloud so that the respondent could ask questions about anything that was unclear as the interview progressed. For each item the interviewer pointed to the terms at the ends of the response continuum as she read them.

Items for the HELPS were generated to elicit responses relating to the

variables of aspiration level, environmental stimulation, models, guidance, reinforcement, and total score.

The Stanford Early Achievement Test (SEAT) and the Boehm Test of Basic Concepts (BTBC) were administered to all children in the samples. These tests served as criterion measures for the purpose of determining the predictive validity of the HELPS. The HELPS was analyzed to determine the total and subscale reliability and internal technical characteristics including item-total reliability and item means and standard deviations.

C. RESULTS

Veldman's TESTAT (19) program was used to determine the internal characteristics of item-total correlation coefficients.

The 25 items having the highest correlations with total test score were selected as the final items for the HELPS. The range of these correlations was from .37 to .65 ($p .001 = .32$). The raw scores of subjects on these items were adjusted to remove response bias with use of the procedure developed by Bergan (2). Bergan's bias adjustment procedure is intended to minimize bias affecting the mean and variability of a subject's responses. Those 11 items that had the lowest value for shared variance with the total score and the smallest item-item correlations were used to construct a response bias adjustment scale. Since the items on the bias adjustment scale were essentially uncorrelated, it was assumed that they did not measure a specific subject trait. A subject's response to any one of these items was assumed to represent random response variation. Under these circumstances all subjects should have had the same mean and standard deviation for the response bias adjustment scale. Any differences among means were taken as an indication of bias in the subject's performance. Differences in the variability of responses on the bias adjustment scale were taken as a measure of bias in the variability of subject's responses. A subject's mean on the response bias adjustment scale was subtracted from each of his item responses on the HELPS instrument in order to remove constant errors, such as the tendency to overestimate a response in a socially desirable direction. The resultant score for each item was divided by the standard deviation computed for the subject's responses on the bias adjustment scale in order to remove bias affecting the variability of responses. For example, a subject might bias his answers by choosing extreme responses.

A principal components factor analysis and varimax rotation (19) were conducted on the adjusted scores. The factors revealed in this analysis did not generally correspond to the hypothesized factors.

The first factor was named Extended Interests and Community Involvement. A summary of item content and the loadings for the rotated factors is presented in Table 1. The items loading on Factor I seem to reflect the parent's interests and opportunities to pursue activities related to events and information outside the home environment and opportunities for the child to share in this interest. This is suggested by loadings on items relating to the use of books and television. Involvement in activities outside the family environment is also reflected in items dealing with contacts with people outside the family and neighborhood groups.

TABLE 1
ROTATED FACTOR LOADINGS AND SUMMARY OF ITEM CONTENT

Item content	Factor loading
<i>Factor I: Extended Interests and Community Involvement</i>	
How often do you talk to your child about things he/she has seen on TV?	.7026
How often does (CHILD) see you reading something?	.6607
What chance does your husband have to get ahead in his job?	.6387
How often do you visit with friends who live in neighborhoods other than your own?	.6265
How often do you visit someone who is not related to you?	.6176
How many organizations does your husband belong to?	.5748
When (CHILD) has a chance to choose what to do around the house, how often does he/she choose to look at a book or magazine?	.5726
How often do you attend social gatherings?	.5482
If (CHILD) asks you a question you can't answer, how often do you try to find the answer by looking in a book?	.4611
<i>Factor II: Valuing Language and School Related Behavior</i>	
How often do you read the newspaper?	.6814
How often do you explain to (CHILD) what steps must come first, second, and so on, in doing some task?	.6049
How often do you tell your child that he/she had behaved well at school?	.4549
How often does (CHILD) play house?	.4193
How much do you (or some other adult) talk with (CHILD) at mealtime?	.4028
How often do you take part in social activities in which some of the people are of different ethnic groups or races?	-.6837
<i>Factor III: Intellectual Guidance</i>	
How often do your children (your child) come to you with homework problems?	.7153
How much did you read to (CHILD) before he/she could read for himself/herself?	.6213
When (CHILD) goes someplace with you, how likely are you to try to point out things which he/she may not have noticed before?	.4925

TABLE 1 (continued)

Item content	Factor loading
<i>Factor IV: Providing a Supportive Environment for School Learning</i>	
How often do you tell friends or family members about some clever thing (CHILD) has said?	— .4111
How much do you (or some other adult) talk with (CHILD) at mealtime?	— .4277
Not counting what happens at school, how often does (CHILD) go to the library, or a museum, or someplace like that?	— .4680
How often does (CHILD) see you reading a novel, or some other book?	— .5666
How often do you ask (CHILD) about what he has done in school?	— .5927
How often do you tell your child that he/she has behaved well at school?	— .7272
How much did you help (CHILD) to recognize words or letters before he entered school?	— .7338
<i>Factor V: Attention</i>	
How often do you give (CHILD) a pat or hug or something like that when you are pleased with the way he is learning?	.7727
When (CHILD) goes someplace with you, how likely are you to try to point out things that he/she may not have noticed before?	.6781
How often do you tell friends or family members about some clever thing (CHILD) has said?	.5482
How often does (CHILD) play house?	.4377

Note: Only those items having an absolute loading value greater than .40 are included.

Loadings and summary descriptions of items loading on Factor II are also presented in Table 1. This factor has been labeled Valuing Language and School Related Behavior. Items loading on this factor seem to describe activities in the home that indicate the extent to which the parent values language and school related behavior, and communicates those values to the child. In such homes there seems to be opportunity to engage in conversation with adults and to imitate adult behavior. It might be noted in this regard that one important rationale for the inclusion of play house settings in educational programs for young children is to provide opportunities for language development through adult role playing. It will be shown below that this factor reflects ethnic and SES differences. It may be that the high negative loading on the item relating to activities with individuals of varied races or ethnic groups reflects a lack of interaction between middle-class families and groups which differ in SES or ethnicity from the middle class.

Also included in the table are summary descriptions and loadings of items

of Factor III. This factor has been named Intellectual Guidance. The items loading on this factor suggest direct attempts of the parent to teach intellectual skills.

Table 1 also presents the loadings and summaries of item content for Factor IV. This factor was called Providing a Supportive Environment for School Learning. These items seem to imply an attempt to prepare the child to function effectively in school, without attempting to duplicate the direct functions of the teacher. These attempts involve activities for providing opportunities to obtain school related information through such community resources as libraries and museums, providing an intellectual atmosphere by modeling the use of printed materials, and communicating with the child and attending to language development.

The item loadings and summaries of item content for Factor V are also presented in the table. This item was labeled Attention. Items loading on this factor for the most part seem to reflect a variety of ways in which the parent attends to the child. The mother provides attention through her expressing interest in the child's learning, relating to the child's ongoing experiences, and calling attention to the child's use of the language. The child's desire to imitate adult behavior, through role playing, may be related to the amount of adult attention that he receives, and this would account for the moderate loading on the "playing house" item.

A second principal components factor analysis and varimax rotation (20) were conducted to determine the relationship between socioeconomic status, ethnic group membership, and the HELPS factors. In this analysis SES and ethnicity were included, along with the HELPS items.

When the factor structure from the analysis of the items without SES and ethnicity is compared with the factor structure with those items included, the factors are quite similar.

The relationships between factors are expressed as cosines, and as these values approach an absolute value of one, the relationship increases to become identical within the limits of precision of the values involved. The order of extraction in the factor analyses was not the same, so that the Factor I from the SES and Ethnicity Matrix (SEM) corresponded to Factor II of the Non SES and Ethnicity Matrix (NSEM) with a cosine value of $-.96$. The SEM II factor relates to the NSEM I with $.99$. The third SEM factor is reflected in the second NSEM factor with a 1.0 cosine, while the fourth SEM factor is the counterpart of the fourth NSEM factor at $.97$. The fifth SEM factor identified with the third NSEM factor, with a -1.00 value indicating a high overall relationship between the two factor structures.

Socioeconomic status and ethnic group membership loaded quite heavily (.85 and .83, respectively) on a factor corresponding quite closely to Factor II, Valuing Language and School Related Behavior.

In order to determine the extent to which home environmental process variables predicted academic performance, a series of stepwise regression analyses (18) were performed. In these analyses HELPS factor scores were used as the predictor variables. The subtest scores on the Stanford Early Achievement Test and the score from the Boehm Test of Basic Concepts were used as criterion measures. In all of the analyses conducted, Factors II and IV (Valuing Language and School Related Behavior and Providing a Supportive Environment for School Learning) accounted for a majority of the variance in prediction. Table 2 presents the results of the five regression analyses for illustrative purposes.

TABLE 2
SUMMARY OF FACTOR SCORES AND BTBC

Step number	Variable entered	Multiple r	Multiple r^2	F Value	Significance level
1	Factor II	.592	.3507	66.98	***
2	Factor IV	.691	.4777	29.91	***
3	Factor I	.705	.4976	4.82	**
4	Factor V	.719	.5166	4.78	*
5	Factor III	.719	.5167	.02	NS

* $p < .05$.

** $p < .01$.

*** $p < .001$.

D. DISCUSSION

Other investigations of relationships between environmental variables and performance on intellectual measures have demonstrated significant levels of association between environmental indices and children's scores on tests of intelligence and achievement (5, 9, 10, 21). One difficulty with the environmental measures used in such research has been that they have utilized procedures that are costly and therefore impractical for wide-scale use in the measurement of home environments. The research reported here was conducted in an attempt to develop procedures that would be more practical for use with large samples, and that might have the potential for discriminating environmental differences and similarities between and within socioeconomic and ethnic groups. The results of this investigation indicated that a questionnaire instrument could be devised that would circumvent the problems associated with the administration and scoring of focused interviews, and at the

same time identify environmental process variables related to school achievement.

One problem associated with the use of measures of SES as predictors of academic achievement has been that indices of SES are so gross and undifferentiated that they fail to reflect modifiable attributes of children's home environments or socialization practices used by their parents. Findings in this investigation suggest that the relationship between SES and academic performance can be explained in large measure by the extent to which the parent values the child's language and school related behavior. This suggests that there is a need to make members of lower socioeconomic groups increasingly aware of the possibilities that they may use education as a vehicle for attaining the rewards available in the society. Experience in working with lower income families suggests that this awareness cannot be effectively communicated by didactic means. It may be necessary to provide parents with concrete procedures for communicating thoughts concerning the value of education to their children. Differences in the kinds of expectations that parents of differing backgrounds communicate about school are apparent in the work of Hess and Shipman (11).

In these results it is interesting to note that restrictions on the family's relationships with the broader community were not related to SES or to academic achievement. These results appear to be at variance with previous research (9) supporting the widely held notion that contact with an extended environment differentiates between the families of children who do relatively well or poorly in school. This apparent contradiction may be due to differences in the populations studied. The investigation previously cited (9) dealt with a group of Mexican-American subjects who predominantly represented the lower SES range of the Mexican-American population. Further research should be conducted to determine whether different environmental characteristics may be associated with academic achievement for different ethnic and SES groups.

E. SUMMARY

A new interview instrument was developed and validated to ascertain its utility as a measure of characteristics of home environments. The instrument was administered to 60 lower SES Mexican-American and 66 middle SES Anglo first graders. A principal component factor analysis and varimax rotation were conducted on scores that had been corrected for response bias. The factors revealed were named I, Extended Interests and Community Involvement; II, Valuing Language and School Related Behavior; III, Intellectual

Guidance; IV, Providing a Supportive Environment for School Learning; and V, Attention. A stepwise regression analysis with factor scores as predictor variables and the Stanford Early Achievement Test and the Boehm Basic Concept Test as criterion variables revealed significant relationships between the criterion measures and Factors I, II, IV, and V, with Factors II (Valuing Language and School Related Behavior) and IV (Providing a Supportive Environment for School Learning) accounting for the majority of the variance in intellectual performance.

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Arizona Center for Early Childhood Education
The University of Arizona
1515 East First Street
Tucson, Arizona 85719

A METHODOLOGICAL COMMENT ON PAGE'S "ROLE OF DEMAND AWARENESS IN THE COMMUNICATOR CREDIBILITY EFFECT"*¹

Institute for Social Research, Florida State University

RICHARD L. BALE

Page (6) in a paper on the role of demand awareness in the communicator credibility effect makes some errors in the statistical treatment of his data which are serious enough to cast considerable doubt upon the validity of the conclusions he draws from his analysis. The errors that Page commits are not idiosyncratic to him, and their relatively common presence in the empirical literature suggests that they deserve some comment.

In order to begin with some criticisms applicable most specifically to Page's study, Table 1 (6, p. 62) is reproduced below, with the exception that variances have been added to the original table in Page's article.

Page reports (6, p. 62) that the interaction effect between source credibility and demand awareness is "highly significant ($F = 96.83$, $df = 1/104$, $p < .001$).". The term "highly significant" is misleading. Also, an examination of the data presented in Table 1 leads to the conclusion that the mode of analysis employed by Page is inappropriate for the data at hand because of numerous violations of the assumptions underlying ANOVA and the F test.

While the F test has been found to be quite robust in the face of violations of the assumptions of interval-level data, normality, and slight deviations from homogeneity of variance when these violations are incurred singly, there is little evidence that shows that its robustness holds up under multiple, or simultaneous, violations of underlying assumptions (1, 2, 4, 7). Upon examination, Page's data appear to meet none of the assumptions underlying ANOVA with the possible exception of normality (which cannot be determined from the data presented in the article): the data are ordered but not interval, the variances are heterogeneous (by a maximum ratio of 7/1 in the samples), and in addition we are faced with unequal cell frequencies.

Page himself notes and discusses the grossly unequal variances among the cells, but then goes on to compute an ANOVA to show that the interaction effect is

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¹ Page, Monte M. (6).

TABLE 1
MEANS AND SDs OF DEMAND AWARE AND UNAWARE SUBJECTS FOR
THE HIGH AND LOW CREDIBILITY CONDITIONS

Awareness	High credibility				Low credibility			
	<i>N</i>	\bar{X}	<i>SD</i>	Variance	<i>N</i>	\bar{X}	<i>SD</i>	Variance
Aware	43	8.23	3.37	11.36	31	.55	1.45	2.10
Unaware	11	.82	1.72	2.96	23	5.91	3.98	15.84

"highly significant." Regarding the unequal cell frequencies, which need not be an insurmountable problem in and of itself, another error was committed. Page performed his analysis using the method of unweighted means which assumes that the inequality of cell frequencies is due to chance occurrences (5). But Page himself had just presented the results of a chi-square test which demonstrated that the inequality of cell frequencies was very unlikely due to chance, but was rather the result of an experimental effect. It seems quite likely that this error further serves to invalidate the results of the data analysis performed.

In view of the numerous violations of the assumptions underlying the type of analysis performed by Page it is difficult to have confidence that any control over Type I error was obtained in this study. The probability ($p < .001$) reported as being associated with the value of the *F* statistic which was computed could be almost anything, and the validity of the conclusions drawn from this result is, therefore, subject to an inordinate amount of skepticism.

In cases such as this, in which virtually all of the assumptions underlying the application of the usual parametric treatment of a set of data are violated, it would seem desirable to seek a viable alternative method of analysis which does not require the same stringent assumptions. In this case Kellogg Wilson (9) has presented a nonparametric alternative to the usual ANOVA which is based on a chi-square analysis for a two-way design. Wilson's procedure is applicable to ordinal data and unequal cell frequencies, and makes no assumptions concerning homogeneity of variance or normality. The application of this procedure rather than the usual parametric ANOVA would leave the reader with a good deal more confidence in the validity of the results of the data analysis and the conclusions drawn.

A second criticism of Page's paper refers to a problem that is encountered in numerous journals and is concerned with the relationship between alpha levels and the power of the test. Earlier we noted that we objected to the use of the term "highly significant" as applied to a test statistic. In the first place a test statistic is simply either statistically significant or not significant relative

to a pre-established alpha level. If, for example, alpha is set as .05 the computed value of a test statistic that has an associated probability of .0001 is no more "highly significant" than is a test statistic which has an associated probability of .04. Both have simply been found to be statistically significant as compared with an arbitrary criterion ($\alpha = .05$).

If, on the other hand, we are to understand by the use of the term "highly significant" when attached to the associated probability of a test statistic that the author considers this associated probability to be identical to the alpha level, another problem arises due to the inverse relationship between Type I and Type II errors when sample size and effect size are held constant.

It will be remembered that Type I (α) and Type II (β) errors provide the answers to two entirely different and logically independent questions. Type I error answers the question of how often we are willing to be wrong—how often we are willing to reject H_0 when in fact it is true. Type II error answers the question of how often we are willing to be wrong in a different way—how often we are willing to fail to reject H_0 when it is in fact false and should be rejected. The *power* of the test (1 minus β) answers the question of how often we wish to be *right*—how often we wish to reject a false H_0 . Rationally, the question of how often we wish to be right should be as important as how often we are willing to tolerate being wrong in our decision about an hypothesis.

At first glance, it may seem that the power of the test is inversely related to the size of the Type I error that we are willing to accept. That is, if we set $\alpha = .01$, we are going to reject a true H_0 one percent of the time, but the other 99 percent of the time we are going to be rejecting a false H_0 . This, however, is *not* the case. The power of the test is defined as 1 minus Type II error, and is *directly* related to the size of the Type I error we are willing to tolerate (providing effect size and sample size are held constant). That is, as the alpha level (the level of "significance") is set smaller, the power of the test also becomes smaller.

What then is the result of reporting "highly significant" results ($\alpha = .001$, for example) when sample sizes are relatively small? Returning to Page's data (and assigning an average of 27 cases to each cell) we can approximately define the probability of his having correctly rejected a *false* H_0 for different alpha levels and effect sizes. Table 2 presents the power of the test for Page's data for $\alpha = .05$ and .01 for small, medium, and large effect sizes.

An examination of Table 2 makes it immediately apparent just how damaging to the power of a test is the use of a very small alpha level with small

TABLE 2^a
POWER OF THE TEST FOR SELECTED ALPHA LEVELS AND EFFECT SIZES FOR $N = 27$

Effect size	Alpha = .05			Alpha = .01		
	Small	Medium	Large	Small	Medium	Large
Power	.10	.45	.83	.03	.21	.63

^a Cohen (3) defines small, medium, and large effect sizes and presents tables of power values.

sample sizes. If we give Page the benefit of the doubt and consider the power of the test to detect only very gross effect sizes, we can see that if he had specified alpha as .05, the test would have had a power of .83 (an 83 percent chance of rejecting a false H_0) which, according to Cohen, is not too bad. If he had specified alpha at .01, he would have had a power of only .63, which is not a great deal better than simply flipping a coin as a test of the hypothesis. If we take a look at small and medium effect sizes for these alpha levels, we see that the probability of rejecting a false H_0 is substantially less than chance, and if we consider alpha to be set at .001, there is literally no power to reject a false H_0 with anything but the most staggering effect size. Therefore (disregarding the violations discussed earlier), we have little reason to believe that Page has in fact rejected a false H_0 .

Perhaps the most basic point to be derived from this example is a conclusion strongly supported by Tversky and Kahneman (8): that more consideration needs to be given to the power of the statistical tests that are presented if the reader is to be able to have any confidence that the conclusions drawn from them have any meaning.

SUMMARY

Errors in the statistical treatment of Page's data which cast doubt on the control of Type I error are pointed out, and a feasible alternative suggested. The relationship between Type I error and the power of the test is discussed, and the *a priori* probabilities of rejecting false null hypotheses for various alpha levels and effect sizes are presented for the size of Page's sample.

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Institute for Social Research
Florida State University
Tallahassee, Florida 32306



STATISTICAL TESTS OF SIGNIFICANCE AND THE
SIGNIFICANCE OF PSYCHOLOGICAL DATA:
A REPLY TO BALE*¹

Department of Psychology, University of Nebraska-Lincoln

MONTE M. PAGE

At the outset it is admitted that my use of the ANOVA on the data of the study (4) criticized by Bale (1) was technically inappropriate. The most serious problem has to do with the unequal cell frequencies. However, issue can be taken with Bale's approach to the use of statistical tests and with his claims regarding the seriousness of using an inappropriate test on the particular data in question. It can be argued that statistical tests are merely tools to help the experimental researcher come to decisions about his data. If this is the case, then the only time that the statistical test is really crucial is when the decision is close. In the case of the study under dispute, the differences were so large as to be significant (in the sense of scientific meaningfulness) by the "eyeball" test made at the time the data were scored. The statistical tests contributed very little to the conclusions drawn by the author regarding the meaning of the results.

It is a matter of convention in our field to report significance tests for all relationships. My use of the F test in this case was a half-hearted conformity to this convention, and it was expected that most readers would accept it as just that. Had Bale been able to read between the lines of my report, he would have heard me saying: "Look how big these differences are! I am certain that a really important psychological relationship has been uncovered here. I know that the variances and the N 's aren't equal, but if you want to play statistics the $F = 96.83$ is so large that surely that will satisfy you that there is a strong relationship here." It was this causal, and perhaps heretical, attitude that led to the conclusion that in this particular case the search for a more appropriate but obscure statistical test was unnecessary.

There are several points in Bale's discussion that call for specific comment. Bale's objection to the term "highly significant" is trivial and goes against standard practice. It is the custom of psychological researchers whose statistical

* Received in the Editorial Office, Provincetown, Massachusetts, on May 1, 1972, and given early publication by Editorial decision. Copyright, 1972, by The Journal Press.

¹ R. L. Bale (1).

results are much larger than that required for the conventional .05 level of significance to call attention to that fact by using the term "highly significant." There is no harm in this practice, and the statistical purist who is offended by this can easily adjust his reading of this to merely "significant." The term "highly significant" by no means should imply, as Bale has inferred, that the minimum acceptable alpha level was set at such an extreme.

It should be pointed out, however, that had the F test resulted in anything close to the conventional .05 alpha level in this study, it would not have been reported. In fact, such weak evidence for the correlation between awareness and attitude change in this instance would have been considered a disconfirmation of the theory, and the data would not have been published without further research. In other studies (5) I have typically used a nonparametric correlation to illustrate the association between awareness and experimental performance. This was also reported (4, p. 63) in the article in question ($\Phi = .68$, $\Phi \text{ Max} = .95$). This is the statistic that the reader of the study should pay attention to. It was decided to calculate the F statistic after the author had decided to illustrate the magnitude of the association by displaying means in a 2×2 table.

One can also question Bale's assertion that the data involved were strictly ordinal in character. While one cannot argue that the scale of measurement is purely interval, it was not merely a rank ordering either. If we assume that there is an underlying attitude change continuum that is reflected in the results of the measurement operations, then the assumption of interval data is not unreasonable. If we take Bale seriously here, there is rarely a case in psychology where the F and t tests would be appropriate. While I do not agree with Bale on this general point, his suggestion of the use of a variation of the median test (6) on these data has now been followed. The result was again *highly significant* (χ^2 for interaction = 44.50, $df = 1$, $p < .001$).

The work of Box (3), Boneau (2), and others concerning the robustness of F and t is well known to most psychologists. These studies are taken as comfort by those, like myself, whose data do not always neatly fit the assumptions of the tests. However, a careful reading of this literature reveals that Bale has a point. The tests are robust regarding the assumptions of normality and equality of variances, but only when sample sizes are equal. Unequal sample sizes plus differences in variance can render these tests either too liberal or too conservative. The statement by Bale that "The probability ($p < .001$) reported as being associated with the value of the F statistic which was computed could be almost anything . . ." is, however, a gross and misleading exaggeration. If I read Boneau (2) correctly, my probability

statement was actually too conservative. With consideration of the fact that the cells having the larger variances also, on the average, had the most subjects, the error term was larger than it would have been had all cells contained equal sample sizes and the proportion among the variances in the cells remained the same. Thus, rather than expressing skepticism over the significance of the F , Bale should have been even more impressed with the rarity of such a large F ratio.

The above discussion suggested yet another way that the data could be analyzed. It was possible to pool the two cells predicted to be high and the two cells predicted low and compute a t test with population variances unknown but assumed to be unequal. When this was done, the relationship was again *highly significant* ($t = 11.88$, $df = 83$, $p < .001$). This is the fourth statistical test that has now been applied to these data and all have led to the same result. It makes no practical difference which test was used, and aside from conforming to convention, there was no need to compute any test at all.

Bale's discussion of power also presents some problems. In the first place, power is only an issue in the planning stages of an analysis when one is concerned about the possibility of making a type II error, or after an analysis when the null hypothesis has been accepted and one is concerned about whether he, in fact, has made a type II error. In the study under discussion, the null hypothesis has been rejected and hence the issue of power is of little concern. In the second place, Bale's discussion of power is predicated upon the erroneous assumption that the alpha level was rigidly set at the .001 level and that the entire decision about the hypothesis depended upon the F test reaching that arbitrary criterion. This was, of course, not the case, and hence Bale's argument is irrelevant. Also, in his discussion of power, Bale cannot draw the conclusion that he does. His statement that since the power of the statistical test is in question, the empirical meaning of the data is also in question is simply false.

It is difficult to believe that Bale, himself, actually believes that the data are open to as much skepticism as he claims. Has he not exaggerated his skepticism in order to strengthen the statistical points he attempted to make? How much would Bale be willing to bet against the replicability of the finding? The present author was willing to bet on the reliability of his findings in this particular case before (and independently of) any formal statistical test was computed. This subjective certainty of the reliability of an empirical finding is basic to that type of significance other than statistical significance being emphasized in this paper. Neither Bale's comments nor the

computation of two more statistical tests has altered that initial belief in the reality of the finding. Bale's point would have been stronger had he chosen a study for attack where the decision about the reliability of the finding was more dependent upon the statistical test.

SUMMARY

The use of the ANOVA on data having both unequal cell N 's and variances does pose problems in the interpretation of the resulting F ratios. Bale's point is technically correct; however, it does not justify his conclusion that an inappropriate test renders these data scientifically meaningless. The differences between groups in the particular study under discussion were so large that no statistical test was really needed to support the E 's claim that the data represent a psychologically real and reliable finding. Some other statistical points that Bale makes seem entirely inappropriate.

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Department of Psychology
University of Nebraska
209 Burnett Hall
Lincoln, Nebraska 68508

PRESIDENTIAL PREFERENCES AND FREEDOM-EQUALITY VALUE PATTERNS IN THE 1968 AMERICAN CAMPAIGN*¹

Department of Psychology, Michigan State University

GEORGE F. BISHOP, ANDREW M. BARCLAY, AND MILTON ROKEACH²

A. INTRODUCTION

Deriving from the work of Adorno *et al.* (1), research on the personality and attitude correlates of American presidential preferences (6, 7, 8, 10, 14, 15, 19) has generally shown a "conservative" candidate choice to be positively associated with a traditionalist, authoritarian personality structure; a "liberal" or "moderate" candidate choice, with an equalitarian pattern. While these studies have served to broaden the scope of *The Authoritarian Personality* (1), there remain some well-known difficulties with the liberalism-conservatism conception that typically underlies them. Briefly, these include (a) whether or not the liberalism-conservatism continuum, even as supposedly manifested in contemporary American politics, is a unidimensional one (4, 9); (b) whether the latter, if actually obtained, can be generalized across cultures and historical periods (3, 11); and (c) whether the liberal-conservative frames of reference so frequently observed among educational and political elites can be extrapolated to mass publics (2, 5, 12, 13).

Alternatively, the purpose of the present research was to explore the utility of a two-dimensional typology of political ideologies formulated by Rokeach (17). Based on a cross-classification of the political values, freedom and equality (17, p. 171), the typology differentiates among four major ideological orientations: (a) capitalism—placing a high value on freedom and a low value on equality; (b) communism—placing a high value on equality and a low value on freedom; (c) democratic socialism—a high value on both freedom and equality; and (d) fascism—a low value on both freedom and equality. A content analysis of values expressed in political writings repre-

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² Presently at the Department of Psychology, University of Western Ontario, London, Ontario, Canada.

senting each of these ideological positions (17, pp. 171-172) showed freedom to rank first and equality 16th among 17 values for Barry Goldwater's *Conscience of a Conservative*; equality first and freedom 17th for Lenin's *Collected Works*; freedom first and equality second for selected works of democratic socialists such as Norman Thomas and Erich Fromm; and freedom 16th and equality 17th for Hitler's *Mein Kampf*. These initial descriptive data provided strong support for the cross-cultural and historical validity of the two-value typology.

The present research, based on two independent studies, extended the two-value typology to the 1968 American presidential campaign, by examining the relationship between presidential preference and the relative importance of freedom and equality as personal, political values.

B. THE METHOD

1. *The Instrument*

The Rokeach Value Survey (16), an instrument used in the two independent studies described below, consists of two separate sets of alphabetically arranged values: (a) 18 terminal values (preferable end-states of existence)—e.g., Salvation (saved, eternal life); A World At Peace (free of war and conflict); Wisdom (a mature understanding of life); Freedom (independence, free choice); Equality (brotherhood, equal opportunity for all); and (b) 18 instrumental values (preferable modes of conduct)—e.g., Ambition (hard-work, aspiration); Cleanliness (neatness, tidiness); Helpfulness (work for the welfare of others); Honesty (sincerity, truthfulness); Responsibility (dependability, reliability). This self-administered instrument instructs the respondent to rank order the alphabetically arranged values (terminal or instrumental) from 1 to 18, "in order of their importance to you."

2. *The National Study*

During April 1968, field interviewers of the National Opinion Research Center in Chicago (contracted by the third author) administered the Rokeach Value Survey to a national probability sample of 1489 American adults (21 and over). The variable of presidential preference was determined by the following question: "As it stands now, which *one* of these possible candidates would you personally like to see elected president next November?" The respondent's choices were limited to Lyndon Johnson, Robert Kennedy, Eugene McCarthy, Richard Nixon, Ronald Reagan, Nelson Rockefeller, and

George Wallace.³ Complete value survey and presidential preference data were obtained for 1233 (83 percent) of the respondents (see Table 1).

3. *The Michigan Activists Study*

During July 1968, the first author obtained comparable value survey and presidential preference data from 121 politically active adults (21 and over) in south-central Michigan. These individuals (see Table 1) were obtained by soliciting presidential campaign workers, Democratic and Republican Party functionaries, and members of partisan political organizations. Soliciting of respondents was terminated just prior to the Republican National Convention in Miami.⁴ It should be noted that while many of these respondents were active in only a very elementary way (e.g., volunteer housewives), this activism is significantly greater than that of most Americans for whom voting is the sole act of political participation (2).

C. RESULTS AND DISCUSSION

Because of the ordinal nature of the obtained data, a nonparametric *median test* (18) of the significance of the differences for freedom and equality was determined for each sample. Table 1 shows the medians, quartile deviations, and composite ranks (rank order of the medians among 18 values) for freedom and equality by presidential group, in the national and Michigan samples.

Examination of the data in Table 1 shows that the overall pattern of results in the two studies was highly similar: equality differentiated significantly ($p < .01$, national study; $p < .001$, Michigan study) among presidential groups; freedom did not. Together, these data suggest that the basic value dimension in American political life was an equalitarian one, with variations ranging from democratic socialist (Johnson, Kennedy, and McCarthy supporters in the national study; Humphrey and McCarthy activists) through centrist (Nixon, Reagan, and Rockefeller supporters; Nixon and Rockefeller activists) to capitalist (Wallace supporters; Reagan and Wallace activists). Considered within the context of some earlier research on American ideology, these results are highly congruent. As McClosky observed in a previous national study of political activists and American adults: "If Americans concur

³ At the time of testing Kennedy was still alive, Humphrey had not yet announced candidacy, and while Johnson had already removed himself from the presidential race, it was too late to remove his name from the printed N.O.R.C. survey forms.

⁴ Soliciting was terminated at this time because it was felt that the results of the convention would have distorted the meaning and significance of the presidential preference variable. A reduction in the desired sample size was the result.

TABLE 1

PRESIDENTIAL GROUP: MEDIAN, QUARTILE DEVIATIONS, AND COMPOSITE RANKS FOR FREEDOM AND EQUALITY OBTAINED FROM A NATIONAL SAMPLE OF AMERICAN ADULTS AND ADULT ACTIVISTS IN THE STATE OF MICHIGAN

Presidential Group	N	Freedom			Equality		
		Med	QD	Rnk	Med	QD	Rnk
National sample							
Johnson	(221)	5.3	2.8	3	7.0	4.3	4
Kennedy	(273)	5.5	2.9	3	6.2	4.2	4
McCarthy	(149)	5.1	2.4	3	7.3	3.9	6
Nixon	(291)	6.4	2.9	3	9.8	3.8	12
Reagan	(52)	4.8	3.7	3	10.3	3.3	10
Rockefeller	(129)	5.4	2.8	3	8.6	3.9	9
Wallace	(118)	5.8	3.0	3	13.0	4.2	14
Michigan activists							
Humphrey	(15)	6.8	2.6	4	5.0	3.4	2
McCarthy	(30)	4.5	1.9	2	4.0	2.3	1
Nixon	(16)	5.5	2.3	2	9.2	4.4	9
Reagan	(11)	2.0	1.8	1	15.0	2.4	17
Rockefeller	(30)	5.1	3.1	2	8.5	4.2	9
Wallace	(19)	2.4	1.2	1	15.0	3.6	18

Note: 1) National sample: two-tailed tests for equality ($\chi^2 = 72.86$, $df = 6$, $p < .01$) and freedom ($\chi^2 = 12.10$, n.s.).

2) Michigan activists, two-tailed tests for equality ($\chi^2 = 35.45$, $df = 5$, $p < .001$) and freedom ($\chi^2 = 8.54$, n.s.).

most strongly about liberty in the abstract, they disagree most strongly about equality" (13, p. 247).

Although communist or fascist value patterns did not emerge in either of the two studies reported here, these patterns may very well exist in the American political culture among marginal, "known" ideological groups such as the Maoist Progressive Labor Party and the American Nazi Party, respectively. Value data on these and other known groups (e.g., Students for a Democratic Society, Young Socialist Alliance, Young Americans for Freedom) will provide for a further test of the two-value model. A more definitive test, however, will require obtaining cross-cultural data on the value dimensions of political systems outside the United States; e.g., it would be hypothesized that the basic value dimension in Eastern European political life (Poland, Czechoslovakia) is a freedom dimension, with variations ranging from communist to democratic socialist; in Western dictatorships, such as Spain and Portugal, a freedom dimension, with variations from fascist to capitalist.

The simplicity of the freedom-equality model should be conducive to these research suggestions.

D. SUMMARY

The Rokeach (17) freedom-equality model of political ideologies was explored within the context of the 1968 American presidential campaign, with the use of presidential preference data from (a) a national study of American adults and (b) an independent study of adult activists in the state of Michigan. The results of the two studies were highly similar: equality differentiated significantly among supporters of presidential candidates: Johnson, Kennedy, McCarthy, Nixon, Reagan, Rockefeller, and Wallace in the national study, and among active supporters of Humphrey, McCarthy, Nixon, Reagan, Rockefeller, and Wallace in Michigan; freedom did not differentiate significantly among presidential groups. The data were interpreted as indicating that the basic value dimension in American political life is an equalitarian one, with variations ranging from democratic socialist to capitalist. Several research extensions were suggested.

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Multidisciplinary Social Science

141 Baker Hall

Michigan State University

East Lansing, Michigan 48823

PERCEPTION OF EMOTION: THE ROLE OF RACE, SEX, AND PRESENTATION MODE*¹

Boston University

A. GEORGE GITTER, NICHOLAS J. KOZEL, AND DAVID I. MOSTOFSKY

A. INTRODUCTION

Woodworth (37) showed that emotional expressions could be arranged on a scale with six ordered categories: (a) mirth; (b) surprise; (c) fear, suffering; (d) anger, determination; (e) disgust, and (f) contempt. Use of this scale yielded a correlation of .92 between intended pose and judgment of the observers. Schlosberg (27) speculated that this scale was circular in nature. From this speculation he factor analytically derived the two dimensions of Unpleasant-Pleasant and Attention-Rejection, and later added a third dimension, Sleep-Tension.

The earliest systematic effort to investigate perception of emotion as a function of nonverbal communication was the work of Darwin (7). Reviews of literature (3, 12, 19) indicate that since that time still photographs have been the most often used stimuli in the studies dealing with recognition of emotion through nonverbal cues (13, 19, 22, 23, 24, 25, 26, 28).

Heeding the caveat by Jenness (19, p. 326) that

... no single photograph of swiftly moving facial musculature is an adequate portrait of an expression of emotion, the changes in tonus being probably more important than the position of the features at any particular instant. Motion pictures might therefore be more readily recognized than single photographs,

some researchers began investigating perception of emotion by means of motion pictures (6, 10, 31), voice samples, both live and recorded (11, 33), and live expressors (9). Although a systematic comparison of the findings is difficult, two overall trends seem to be apparent: (a) an above-chance accuracy of perception can be expected even when still photographs (both posed and candid) are used as stimuli; (b) the use of other modes of presentation (e.g., motion pictures) improves accuracy of judgment of perception of emotion.

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Both Jenness (19) and Bruner and Tagiuri (3) conclude that experimental evidence results regarding sex differences are conflicting. Some studies have found no differences at all (1, 2, 6, 14, 15, 17, 18, 31), while a number of studies report that women excel men in both the expression and perception of emotion (4, 9, 10, 11, 19, 20, 21, 34, 35). Kanner (20) reports that men are slightly more accurate than women in perception of emotion, although the weight of evidence seems to favor a slight superiority of women in both the perception and expression of emotions (10, 11, 19, 32, 34, 35).

Several studies have investigated the effect of the race of the perceiver on perception of emotion, and have tried to identify personality correlates involved in stereotyping of black expressors (21, 29, 30). Other studies have attempted to investigate differences within various national and racial groups (5, 8, 34, 35, 36).

None of these studies has dealt specifically with the question of whether black and white Americans are perceived differently when expressing their emotions.

B. METHOD

The three independent variables (modality [audio/visual, visual/only, audio/only and still/pictures]; race of expressor [white and Negro]; and sex of perceiver [M, F]) were examined in a $2 \times 2 \times 4$ factorial design.

1. Subjects

White male and female undergraduates from Boston University and Northeastern University were recruited. The Ss ($N = 183$) were paid and were randomly assigned to one of the 16 different treatment groups.

2. Procedure

Mode of presentation was controlled by exposing four subgroups to sound motion picture enactments of the seven emotions. The visual/only presentations and the audio/only presentations were shown to two other sets of four subgroups. Still pictures projected onto a screen were shown to a final set of four subgroups. The still pictures consisted of 70 enlargements (10 actresses \times seven emotions) of single frames from the motion picture. The selected frames were independently judged by three graduate students as being the most typical of the emotions. Two subgroups in each set were comprised of males and one was female. Each of these groups was subdivided to exposure to the white female portrayals, while the other was shown the Negro female portrayals.

Subjects were tested in group sessions. The subjects belonging to each experimental group were brought into a classroom, seated, and handed a folder containing a sheet of instructions, an answer sheet, and a list of the seven emotions that were to be judged. The listing of the emotions was randomly ordered to eliminate the possibility of bias that might result from an alphabetical or other systematic listing of the names. After each portrayal of emotion (trial), the subjects were allowed 20 seconds to judge the emotion that they thought corresponded best with the portrayal from the list given to them. Halfway through the trial the subjects were informed of the remaining time allotted them.

The stimulus materials were prepared with the use of 10 female professional actresses from the Harvard Summer Players and the People's Theatre of Cambridge. Five were white and five were Negro. Each actress was photographed with a 16 mm Auricon sound motion picture camera (black and white film) while enacting various emotions. Each actress was filmed individually, enacting seven emotions in sequence: anger, happiness, surprise, fear, disgust, pain, and sadness. In the selection of the emotions to be portrayed, emphasis was placed on maximizing the ease with which the emotion could be enacted.

To keep all extraneous variables constant, the actresses were filmed while seated, facing 45° away from the camera, as if they were interacting with another person out of view of the camera. Each actress was filmed at 3/4 full figure. The background and lighting were kept constant in all cases. Furthermore, no actress was allowed to change her makeup or her dress, or in any other way alter her appearance between portrayals of emotion. If for any reason the director or the actresses were dissatisfied with the original take, an unlimited number of retakes was permitted.

As each actress portrayed a particular emotion, she recited the same monologue: "Where are you? What are you doing?" thus maintaining a constant semantic content for all emotion portrayals for all modes of presentation. The 35 emotion portrayals of the white actresses (seven emotions for each of the five actresses) were spliced in random order into one large reel. The same procedure was used with the 35 portrayals of emotion of the Negro actresses. Each emotion portrayal lasted approximately 10 seconds.

C. RESULTS

Subjects' responses were coded. Both the total accuracy scores (i.e., when the emotion perceived corresponded to the emotion portrayed) and the correctly perceived scores for each emotion were analyzed. The Newman-Keuls

test was used throughout the analysis to test significant differences for the individual contrasts.

Differences among sex, race, and modality for total correct scores and scores for the individual emotions are summarized in Table 1 and Table 2.

TABLE 1
LEVEL OF SIGNIFICANT DIFFERENCES IN ACCURACY OF PERCEPTION OF EMOTION

Emotion	A ^a	B ^b	C ^c	AB	AC	BC	ABC
Total	.001		.001				.05
Anger		.001	.001			.05	
Happiness	.05	.001	.001	.05		.01	
Surprise			.001		.01		
Fear	.05	.05	.001			.05	
Disgust	.001		.001				
Pain		.001	.001			.01	.05
Sadness	.05		.001			.001	

^a A = sex of perceiver.

^b B = race of expressor.

^c C = mode of presentation.

The effect of mode of presentation of stimuli was highly significant, not only in terms of total accuracy scores, but also for each of the seven individual emotions. With some exceptions, audio-visual was superior to visual/only, which was superior to audio/only, which in turn was superior to still pictures. Sex of perceiver was somewhat less potent as an independent variable and led to significant results in the analysis of total accuracy scores and in the analysis of four out of seven of the separate emotions.

Where significant, women emerged as superior to men in their ability to perceive emotion. Race of expressor led to even fewer significant differences; main effect for four of the seven individual emotions and no main effect for total accuracy scores. No consistent pattern emerged in these last findings. White expressors enacting happiness and fear were perceived with higher accuracy, while Negro expressors led to higher scores when enacting anger and sadness. However, race of expressor interacting with mode of presentation was found significant in five out of seven individual emotions.

When the data for all of the expressors in the two racial groups were analyzed, there were no differences between the two groups of actresses in terms of the total accuracy with which they were perceived. When the expressors were viewed individually, some Negro actresses were better in communicating emotions than other Negro and white actresses. This observation was also true of the white expressors when they were viewed individually. There was a significant higher order interaction between race, sex, modality.

TABLE 2
SUMMARY RESULTS

Emotions	Race of expressor (for visual still)	ANOVA Effects	
		Presentation mode	Sex of perceiver
Anger	Negro > White** (for visual still)	AV > still*** Visual > still***	
Happiness	White > Negro***	AV > audio*** Visual > audio*** Still > audio***	F > M*
Surprise		AV > still *** Visual > still Audio > still	Sex X Race* M White > Negro* F W/N > M Negro* Sex X Modality* F > AV M > Visual M > Audio M > Still
Fear	White > black*	AV > still* .AV > audio	Race X Modality* W, AV > N/W audio W, AV > N/W still
Disgust Pain	Negro > White***	Audio > still*** AV > audio*** Visual > audio*** Still > audio***	Race (expressor) X Modality**
Sadness		AV > still***	Race (expressor) X Modality***
Total (pooled emotions)		AV > visual*** AV > audio***	Sex X Race X Modality*

* = .05.

** = .01.

*** = .001.

and expressors ($F = 18.096$, $df = 12/668$, $p < .001$), although race of expressor as a main effect was not significant.

Table 3 shows the total frequencies of perception for each of the seven emotions. There was a total of 915 judgments for each emotion (183 sub-

TABLE 3
DISTRIBUTION OF TOTAL JUDGMENTS

Emotion portrayed	Emotion judged						
	Anger	Happiness	Surprise	Fear	Disgust	Pain	Sadness
Anger	656	22	43	23	138	14	19*
Happiness	7	744	104	20	16	12	12
Surprise	56	34	642	114	30	4	35
Fear	55	8	70	640	17	67	58
Disgust	197	54	56	36	472	39	61
Pain	27	13	11	143	29	573	119
Sadness	28	33	53	125	79	64	533

* Maximum number of correct judgments = 915 (183 subjects \times five judgments).

jects judging five portrayals of each emotion). Of these, happiness, anger, surprise, and fear were judged correctly more often than pain, sadness, and disgust. The greatest confusion was between anger and disgust.

When happiness was the emotion portrayed, it was most often erroneously perceived as surprise. However, surprise was most frequently confused with fear. There was no one outstanding emotion with which fear was confused. Erroneous perceptions of this emotion were about equally distributed among pain, sadness, surprise, and anger. The emotion of pain was most frequently confused with both fear and sadness, while sadness was most often erroneously called fear.

The frequency for correct judgments was further analyzed according to race of expressor and mode of presentation and the results paralleled the total judgments with one exception: viz. when the expressor was white, the portrayal of fear was most often confused with surprise, but when the expressor was Negro, her portrayal of fear was most often confused with pain and sadness.

D. DISCUSSION

The potent effect of presentation modality on the perception of emotions emerged as one of the clearest patterns.

Meltzer and Thompson's (33) assertion of the inadequacy of still photographs as stimuli has not only been substantiated, but the audio/visual and visual/only modalities were shown to be significantly better than the audio/

only mode. The modality pattern holds true for every emotion. These findings support the proposition that the correct perception of emotion is contingent upon its mode of presentation.

The pattern of results of the Perception of Emotion data concerning race of expressor is also relevant to perception of emotion, though less dramatically than the variable of modality. In the perception of four of the seven emotions, racial differences were significant, such that Negro expressors were perceived with significantly greater accuracy by white perceivers, whereas only white expressors enacting happiness and fear were judged with the same degree of accuracy by the same subjects. This phenomenon might be explained in terms of the way white American society as a whole views its black subculture. Recent racial turmoil has probably predisposed the white community to a mass consciousness of Negro militancy, in which anger of hostility is the predominant characteristic emotion. To augment the present conjecture further, the Negro expressors' enactment of sadness was perceived with significantly greater accuracy. This latter phenomenon, which may be viewed as an extension of white America's predisposed interpretation of Negro motives and feelings, is probably revelatory of a greater consciousness of the humiliating history of black subservience in the United States.

Current events, perhaps related to incipient feelings of guilt and mistrust on the part of a largely white society, have probably underlined an awareness of the emotional status of black America. Such an increased awareness may well have culminated in an increased sensitivity of a Negro's feelings of sadness and anger by whites.

Contrary to the findings of previous studies (1, 16, 17, 18), the pattern of results concerned with sex of perceiver reveals that women are significantly superior to men in overall ability to recognize emotional expressions. Perhaps lack of differences between the sexes in perception of emotion in earlier studies was due to the use of still pictures as stimuli.

With respect to the individual emotions, women were significantly more accurate in perceiving happiness, fear, disgust, and sadness. Drag and Shaw (9) assumed that accuracy of expression of emotion is a function of practice and that expressions of happiness, love, fear, and anger are more characteristic of the woman's role in society. If this is true of perception, as well as expression of emotion, the present findings support their results, assuming that practice breeds familiarity both actively as expression of emotion or passively as in emotional perception. One could speculate that the woman's role, which historically has been subservient to the man's, would be just as well attuned to the negative emotions of disgust and sadness as to the positive ones of love

and happiness, and that her role encompasses a broader emotional spectrum than Drag and Shaw (9) had anticipated.

This study does lend support for the existence of potent and interactive effects.

E. SUMMARY

A $2 \times 2 \times 4$ factorial design was utilized to investigate the effects of sex of perceiver, race of expressor (Negro and white), and mode of presentation of stimuli (audio/visual, visual/only, audio/only, and still pictures) on perception of emotion. Perception of seven emotions (anger, happiness, surprise, fear, disgust, pain, and sadness) was analyzed in terms of total accuracy scores and correct perception of individual emotion scores.

Results indicate a main effect for sensory modality: emotions are most accurately perceived in audio/visual, followed by visual/only, audio/only, and still pictures, respectively. There was also main effect for sex of perceiver: females were superior to males in overall perception of emotion. Contradictory results for main effect of race of expressor were obtained; Negroes were more accurately perceived in the expression of anger and sadness, whereas whites were more accurately perceived in the expression of happiness and fear.

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David I. Mostofsky

Department of Psychology

Boston University

64 Cummington Street

Boston, Massachusetts 02215

PRESTIGE OF A HARM-DOER AND SUBJECTIVE ESTIMATIONS OF POSSIBLE HARM*¹

*Georgia State University, University of Florida, and
State University of New York at Albany*

ROBERT C. BROWN, JR., BARRY R. SCHLENKER, AND
JAMES T. TEDESCHI

A. INTRODUCTION

In his analysis of international relations, Singer (9, 10) proposed that evidence of the *capability* of the nation to do harm and its *intentions* to do so produce threat perception in a target-nation. Singer assumed that capability and intentions combine multiplicatively to determine the extent of the perceived threat. The multiplicative relationship means that if a nation has few resources or if it seldom expresses its desire to coerce other nations, it would not be perceived as a threat. If the value of either of these variables remains low while the other increases, a threat still will not be perceived. Only when both intent and capability to harm coexist will the perception of threat occur. Pruitt (6) has followed up Singer's analysis from a social-psychological perspective. Pruitt hypothesized that when great capabilities to do harm are present, target-nations will be disposed to interpret ambiguous information as evidence for malevolent intentions. It also could be hypothesized that when evidence for malevolent intentions is present, capability will be inferred unless unequivocal information to the contrary exists. Thus, the United States has been all too willing to attribute great capability to China even though she lags far behind in nuclear strength and the means to deliver it.

Tedeschi, Bonoma, and Schlenker (11) have discussed the effects of capability and intentions on interpersonal interactions which though limited to dyadic effects are bases of international relations and thus lend themselves for study in miniature in the laboratory. The product of capability and intentions determines an individual's *prestige*. Capability was defined as the disposable material resources that could be employed by a person for purposes of rewarding or punishing prospective targets. Intentions were conceptualized as falling

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somewhere along a dimension anchored at one end with accommodative or benevolent intentions and at the other by exploitative or malevolent intentions. When a source of influence provides evidence of high punishment capability and exploitative intentions, he is described as having high prestige for purposes of coercion; while when he evidences both reward capability and accommodative intentions, he is said to possess high prestige for purposes of reward power.

Tedeschi *et al.* hypothesized that the prestige of a source systematically biases a target's estimations of the probability of receiving harm or benefits. Given that the actual probability is held constant, the higher an individual's prestige, the greater will be a target's subjective estimation of the probability of reward or punishment mediation.

The present study was designed to assess the effects of prestige on subjective estimations of the probability of receiving harm. Ss were given the task of estimating the probability that an experimental confederate (*C*) would deliver an electric shock to them. The capability of the *C* was varied by stating that the shock was set at either a high or low intensity. The Ss' perception of the *C*'s intention to harm was varied by instructing the *C* in the Ss' presence that he (*C*) could receive a monetary reward for each shock delivered or no mention was made of an incentive. The objective shock probability was manipulated by *C*'s actually delivering a shock either zero, five, or 10 times during the 10 opportunities provided him. Hence, the experiment was a $2 \times 2 \times 3$ factorial design. At the conclusion of the interaction, Ss filled out questionnaires designed to assess the success of the manipulations, and to obtain evaluations and perceived power of the *C*.

If capability and intentions are multiplicatively related, then probability estimations and perceived potency of the confederate should interact, being maximal when high capability and harmful intentions are present. The remaining three groups formed by the other combinations of capability and intentions levels should not differ from each other. If these factors are not so related, two main effects might be expected. If intentions or capability are inferred from the presence of the other, estimations of harm and perceived power would be relatively high when either of the factors was high.

It was thus hypothesized that

1. Target's estimations of the probability of receiving a shock would be highest when the target faced a source who had high capability and harmful intentions.

2. Subjective estimations of the probability of harm would be a direct function of the actual probability, replicating previous studies (7, 8). Given the

small number of trials, the actual and estimated probabilities were not expected to match exactly.

3. Post-interaction liking for and positive evaluations of the confederate should be inversely related to the amount of harm received (2, 3, 7, 8).

4. Post interaction ratings of potency of the confederate would be directly related to the number of shocks he mediated (3, 7, 8).

B. METHOD

1. Subjects

Ninety-six undergraduate males signed up for the experiment in partial fulfillment of an introductory psychology course requirement. A written note on the posted sign-up sheets informed *Ss* that they would participate in pairs in an investigation of "Probability Estimation." Male *Cs* were randomized across conditions of the experiment and acted as the second subject. Three female upperclass psychology majors served as *Es*.² It was felt that the presence of a female *E* would lessen *S's* trepidation and subsequent refusal to participate in an experiment employing electric shock. *Ss* were randomly assigned across the 12 cells of the experimental design with the only stipulation being that eight *Ss* were to be placed in each cell.

2. Apparatus

The apparatus consisted of a set of finger electrodes, a Foringer shock generator (Model No. 1154M11), a pair of signal lights, and an automated contingency timer. One light and the finger electrodes were placed at the *S's* end of a table in the experimental room, while the shock generator, the second light, and the timing apparatus were placed at the *C's* end of the table. *S* and *C* were separated by a 36" high partition placed in the center of the table. The timer was preset so that the signals for all shock options were of three seconds duration, with a 15-second intertrial interval. The shock generator was calibrated to deliver a 15-milliamp shock to the *S* when a button on the face of the timer was depressed.

3. Procedure

The *E* greeted both the *S* and the *C* in a waiting room and escorted them to the entrance of the experimental room containing the apparatus. Inasmuch

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as informed consent was a concern in this study because of the use of a noxious stimulus, the *E* made it clear to *S*s that the experiment involved electric shock and that they could withdraw from the experiment if they so desired, receiving experimental credit for showing up. After both individuals agreed to continue, they were informed that one person would serve as an equipment operator and the other would serve as an estimator. A sham drawing was held in which the *C* always emerged as the "operator" and the *S* as the "estimator." The *S* was given a page of printed instructions explaining his task in the experiment. The instructions indicated that whenever the white light in front of him became illuminated, the operator had the option of delivering a one-second shock to the estimator's fingertips. In the high capability conditions, the *S* was informed that the shock would be one that was "painful but not damaging" and in the low capability conditions the *S* was told that the shock would be "unpleasant but not painful." Only the description of the shock was varied, as the actual shock intensity was held constant across all conditions. The instructions further stated that whether or not a shock was actually delivered was entirely up to the operator. A white light on each side of the table would come on every 18 seconds and remain on for three seconds. During the 15-second interval prior to each illumination of the light, the *S* was instructed to estimate the probability with which he thought a shock would *actually be delivered the next time that the light came on*. The *S* was asked to make his estimations in whole percentages between zero percent and 100% inclusive, where zero percent indicated that the estimator felt that there would be no probability of receiving a shock on the next trial and 100% indicated that the estimator felt that he would certainly receive a shock on the next trial. The bottom of the instruction sheet contained 10 spaces, corresponding to 10 illuminations of the light, on which the *S* was to record his probability estimations.

After the *S* had finished reading the printed instructions, the *E* verbally instructed both the *S* and the *C*. The *C*'s task was said to involve a decision whether or not to deliver a shock to the *S* on any particular trial, a decision that was entirely his, and then either to press or not press the shock delivery button when the light illuminated. In an attempt to manipulate the *S*'s perceptions of the malevolent intention of the *C*, the latter was either offered a monetary reward for each shock delivered or was offered no incentive to harm the *S*. In the incentive conditions, the *C* was instructed (in the presence of the *S*) that the *E* had been "authorized to pay you \$.10 for each shock you deliver." In the no-incentive conditions, no mention of payment was made. When the *E* was satisfied that the *S* understood both his and the *C*'s task, she attached electrodes to the *S*'s fingertips, stated that she would be observing

through a one-way mirror, requested that there be no further talking or communication of any kind, and said, "Begin," asking the *S* to make his first estimation.

Shocks were delivered by the *C* according to one of three schedules: (a) on none of the shock option trials; (b) on the 1st, 4th, 6th, 7th, and 9th trials; or (c) on every shock option trial. At the conclusion of 10 trials, the *S* and *C* were taken to individual cubicles to obtain postinteraction impressions. The *S* was given an abbreviated form of the Semantic Differential (5) which contained separate pages for self and other person ratings on 12 pairs of polar adjectives. The evaluative dimension contained the polar adjectives good-bad, kind-cruel, honest-dishonest, and beneficial-harmful. The activity dimension contained the adjectives active-passive, progressive-regressive, changeable-stable, and excitable-calm. The potency dimension contained the adjectives hard-soft, strong-weak, severe-lenient, and rash-cautious. The *S* also was asked to complete an Interpersonal Judgment Scale, IJS (1). The IJS contained the dependent variables of liking and esteem for the *C*. The esteem measure was obtained by adding each *S*'s ratings of the *C* on the intelligence and respect items of a modified IJS. Finally, a postinteraction questionnaire asked *S*s how many shocks had been delivered during the interaction and the amount of power they felt the operator possessed. *S*s were asked to assess the amount of power controlled by the operator by marking a scale 1 to 5, where 1 indicated no power and 5 indicated high power.

All *S*s were thoroughly debriefed and an effort was made to assure that no *S* left the laboratory feeling anxious or upset as a consequence of the experience.

C. RESULTS

1. Probability Estimations

Each *S*'s estimations of the probability of receiving a shock on each trial were averaged over the 10 trials to yield an overall measure of subjective probability of harm. A $2 \times 2 \times 3$ analysis of variance on this measure revealed a main effect of the number of shocks received ($F = 27.57$, $df = 2/84$, $p < .001$). As predicted and as can be seen in Table 1, subjective probability estimations were a direct function of the number of shocks received. Duncan Range tests showed that each of the three shock conditions was significantly different from the others ($ps < .01$).

An interaction between incentive and the number of shocks also was found ($F = 4.41$, $df = 2/84$, $p < .04$). As can be seen from the means presented in Table 1, the addition of the incentive caused the *S*s to be more responsive

to the actual number of shocks received. Although the subjective probability estimates of *Ss* in the no-incentive conditions did reflect the extremely different objective probabilities of zero percent and 100%, neither of these extremes produced subjective estimates different from a shock schedule of 50% probability. *Ss* in the incentive conditions emitted subjective probability estimates that more nearly matched the objective probabilities; their estimates were affected by all objective probability conditions, with all three means of subjective probabilities differing from one another.

TABLE 1
SUBJECTIVE PROBABILITY ESTIMATION MEANS

Condition	Number of shocks		
	0	5	10
Incentive	.368 _d	.587 _{bc}	.810 _a
No incentive	.481 _{cd}	.526 _c	.700 _{ab}
Total	.424 _c	.556 _y	.755 _a

Note: Means with different subscripts differ by at least $p < .05$.

An analysis of variance also was performed on the probability estimations made on the first trial of the experiment to determine if capability and incentive had an early effect which later washed out. No main effects or interactions were found (all $ps > .10$).

2. Postinteraction Impressions

While the capability manipulation had no effect on the *Ss*' probability estimations, postinteraction questionnaires revealed that perceptual differences were established ($F = 11.21$, $df = 1/82$, $p < .001$). *Ss* in the high capability conditions ($\bar{X} = 3.2$) perceived the *C* as more powerful than did *Ss* in the low capability conditions ($\bar{X} = 2.3$). No other effects were found on perceptions of power.

Only the frequency of shocks had effects of the *Ss*' postinteraction impressions of the *C*. The number of shocks delivered to *Ss* affected (a) liking for the *C* ($F = 10.56$, $df = 2/84$, $p < .001$); (b) esteem for the *C* ($F = 6.71$, $df = 2/84$, $p < .003$); (c) evaluation of the *C* ($F = 9.37$, $df = 2/84$, $p < .001$); (d) perceived activity of the *C* ($F = 7.79$, $df = 2/84$, $p < .001$); and (e) perceived potency of the *C* ($F = 34.67$, $df = 2/84$, $p < .001$). As can be seen from the means presented in Table 2, the number of shocks delivered was directly related to perceived activity and potency, and inversely related to liking, esteem, and evaluation.

TABLE 2
POSTINTERACTION IMPRESSIONS OF THE CONFEDERATE AS A FUNCTION
OF THE NUMBER OF SHOCKS RECEIVED

Dependent variable	Number of shocks		
	0	5	10
Liking ^a	11.2 _a	10.3 _a	8.5 _b
Esteem ^a	11.0 _c	10.6 _c	9.5 _d
Evaluation ^b	6.9 _e	3.3 _f	0.9 _g
Activity ^b	-3.1 _h	0.3 _i	-0.1 _i
Potency ^b	-3.7 _j	0.2 _k	3.4 _l

Note: Within each row, means with different subscripts differ by at least $p < .05$.

^a Two represents the low end of the scale, while 14 represents the high end.

^b Means could range from a low of -12 to a high of +12.

D. DISCUSSION

Post-test measures established that the capability manipulation did produce the intended perception of the high or low power of the potential harm-doer by Ss. Hypothesis 1 was not confirmed, however, since the predicted effects of capability and intentions upon the probability estimations made by Ss were not obtained. The intentions manipulation did not affect postinteraction perceptions of power, but did interact with the number of shocks received by Ss to affect probability estimations. Hypothesis 2 was confirmed by the evidence that subjective probability estimations were a direct function of the frequency with which Ss were harmed. Hypotheses 3 and 4 were also confirmed: Ss evaluated the C more positively, esteemed him more highly, and liked him more the less often they were shocked, but perceived the C as more potent and active the more frequently C delivered the shock.

The interaction between shock frequency and incentive on Ss' estimations of the probability of being shocked represented an enhancement in the monetary incentive conditions of the predicted main effect of shock frequency. Ss in the incentive conditions estimated more toward the extremes when the C shocked them either always or never; hence they were slightly more accurate than Ss in the no-incentive conditions. Any explanation of this effect is clearly *post hoc*. It might be that the addition of the incentive caused the Ss to become more attentive to the shock-related behavior of the C. When a reason for harm-doing is provided, the potential harm-doer's behavior is carefully attended and subsequent probability estimations are more accurate. Alternatively, the C's behavior in the incentive conditions might have been interpreted less equivocally than in the no-incentive conditions. In the no-incentive conditions, the C could be perceived as shocking (or not shocking) for any or all of several reasons:

because the *C* assumed that the *E* wanted him to deliver a certain number of shocks; because *C* wanted to see how and if the equipment functioned; because *C* had either a "good" or a "bad" day; because *C* was a "good" or "bad" person; etc. Any of these reasons might be perceived as the cause of the *C*'s behavior on a given trial, and such multiplicity of possible causes is not conducive to veridicality of probability estimations; estimations therefore would remain less extreme and around the 50% point. In the incentive conditions, a salient reason was provided the *C* for delivering shock—to gain the money. Consistent delivery of shock would provide evidence that the *C* was after the money and would continue shocking. Nondelivery of shock would indicate that the *C* was not interested in the money and would seldom, if ever, shock. Thus, in the incentive condition, only when shocks were delivered half the time did the interpretation of the *C*'s behavior become equivocal and hover around 50%.

As hypothesized, the frequency of harm mediated perceptions of liking, positive evaluations, and esteem, replicating previous studies (2, 3, 7, 8) and providing strong support for a reinforcement interpretation of interpersonal attraction (e.g., 4). Interestingly, all evaluations of the *C* ranged from neutrality to positivity, even when shock was delivered on every trial. This positivity bias toward the *C* might have made a contribution to the failure of prestige to effect subjective probabilities. It is plausible that a source's capability to do harm is irrelevant to a potential target when the target likes the source and believes the liking to be mutual. For example, the magnitude of the stockpile of nuclear weapons possessed by the United States should be much more relevant to the Soviet Union or China than to Canada or Mexico. Conversely, it could be argued that a source's capability to benefit a target would be relevant to the latter when he likes the source, but not when mutual hostilities are present. These *post hoc* hypotheses are easily testable with the use of a research paradigm similar to that employed in the present study, but with the addition of an attraction manipulation.

Unfortunately, as is the case with any study that fails to obtain a predicted effect, other alternative explanations cannot be dismissed. It could have been that irrespective of the capability conditions, the portend of shock was so great as to produce maximal capability effects. Alternatively, it could be that the intentions dimension was never operationalized and that the incentive manipulation only affected the perceived *reason* a *C* might perpetrate harm, but not his actual intention to harm. Further empirical work is desirable to determine when, if ever, prestige affects subjective probability of harm.

In general, the postinteraction impressions of the dynamism of the harm-

doer were a function of his actual harm-doing rather than his perceived power—the perceptions rather accurately reflected the actual interactions. The more the *C* used the shock device, the more potent and active he was perceived, but also the less good, liked, and esteemed he was seen.

E. SUMMARY

Three basic hypotheses guided the present study. It was predicted that target persons would estimate a higher probability of being harmed (a) the greater the capability of a potential harm-doer, (b) the greater the incentive for the harm-doer to perpetrate harm, and (c) the greater the actual frequency of being harmed.

Subjects were asked to estimate the probability that a confederate peer would deliver either "unpleasant but not painful" (low capability) or "painful but not damaging" (high capability) shocks through a finger electrode. The confederate was given a monetary incentive for each shock delivered or was not given an incentive. Subjects were actually shocked 0, 5, or 10 times out of 10 trials. The subjects estimated the probability on each trial that they would be shocked.

Although subjects rated the harm-doer with the greatest capability as more powerful on a posttest, their probability estimations were unaffected by the capability manipulation, a disconfirmation of Hypothesis 1. An interaction between incentive and shock frequency on probability estimations indicated that subjects matched objective frequencies more closely when the harm-doer could benefit (high incentive conditions). Postinteraction impressions of activity and potency of the harm-doer were directly related to the number of shocks delivered. Ratings of liking, esteem, and evaluation were inversely related to the number of shocks delivered.

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James T. Tedeschi

Department of Psychology

State University of New York at Albany

1400 Washington Avenue

Albany, New York 12222

THE EFFECTS OF VARIATIONS IN EVALUATIVENESS OF TRAITS ON THE RELATION BETWEEN STIMULUS AFFECT AND COGNITIVE COMPLEXITY*

University of Aberdeen

J. W. SHEPHERD

A. INTRODUCTION

There has been some disagreement in the literature (4, 5) about whether people form more complex impressions of those they like or of those they dislike. Two principal hypotheses have been advanced, giving rise to opposing predictions. Crockett (4) has advanced a "frequency of interaction" hypothesis, which argues that people form more complex impressions of those they like, with whom they interact frequently, than of those they dislike, with whom they interact less frequently. In a study by Supnick, reported in Crockett (4), this prediction was supported.

Irwin, Tripodi, and Bieri (5) have put forward an alternative "vigilance" hypothesis, according to which people differentiate more finely among negatively valenced figures so as to be able to isolate and identify these potentially dangerous individuals. The results of two experiments they report, in which complexity scores reflect independent dimensions of judgement, support this hypothesis.

A different interpretation of the results of Irwin *et al.* would be to regard them as a special case of the Pollyanna hypothesis applied to personality judgements. According to this hypothesis (3, p. 1), "There is a universal human tendency to use evaluatively positive words more frequently, diversely and facilely than evaluatively negative words." Boucher and Osgood's review of psycholinguistic evidence supports the hypothesis, and Warr (8) has shown its application to personal judgements. In a number of studies he has shown that subjects more readily infer the existence of desirable traits from a cue trait than the existence of undesirable traits.

Extending this theory, it may be argued that the existence of one desirable characteristic should imply the existence of other desirable characteristics more strongly than the existence of one undesirable characteristic should imply the

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existence of other undesirable characteristics. Desirable traits attributed to positive figures should thus be more functionally similar than undesirable traits attributed to negative figures. With the use of the technique of Irwin *et al.*, the complexity scores for negative figures should be higher than those for positive figures.

If this argument is correct, differences in complexity scores between positive and negative figures should occur only when these figures are rated on evaluative traits. Where the traits do not carry a strong evaluative implication, there should be no difference in the readiness to infer one trait from another for figures of different affective significance, and the complexity scores for these figures should not differ significantly.

Further, it would be expected that complexity scores for positive figures should be higher on nonevaluative traits than on evaluative traits, since the implicative relations between nonevaluative traits should be lower.

B. METHOD

1. Subjects

Thirty male and 30 female graduate students in education in the University of Aberdeen served as subjects during a normal class session.

2. Procedure

All subjects received the same form of the modification of Kelly's Role Construct Repertory Grid described by Bieri *et al.* (2). The grid consisted of 10 rows and 10 columns. At the head of each column Ss were asked to write the initials of a person whom they knew who satisfied the description given, a different person being required for each column. For five columns this description was "A person you like," and for the other five columns it was "A person you dislike." Positive and negative figures were interspersed.

Each row in the grid had a pair of bipolar adjectives presented at one end of the row. These adjectives were selected from Anderson's (1) list of 555 adjectives for which he computed Liking ratings on the basis of students' evaluations. For five of the bipolar scales, the Liking ratings on Anderson's scales were at opposite extremes. These were Sincere (5.73)-Insincere (1.27), Kind-hearted (5.14)-Mean (.37), Interesting (5.11)-Dull (1.21), Friendly (5.19)-Hostile (.91), and Trustworthy (5.39)-Untrustworthy (.62). For the other five pairs of adjectives the Liking value of each pole was similar, and close to the neutral point. These were Talkative (3.52)-Quiet (3.11), Methodical (3.25)-Unmethodical (2.62), Impulsive (3.07)-Cautious (3.34), Bold (3.36)-Shy (2.91), and Rebellious (2.58)-Conventional (2.60). The

numbers in parentheses are Anderson's Liking ratings. The first five pairs were the evaluative traits, the second five pairs the nonevaluative. Evaluative and nonevaluative pairs were allocated randomly to rows, with the trait with the higher Liking rating always on the left of the pair.

Subjects were asked to rate the 10 figures named at the head of the columns on each of the 10 pairs of scales, with the use of a six-point scale from +3 to -3 with no zero point, by entering the appropriate number in the cell of the grid. A +3 indicated that the left hand adjective applied most appropriately to the role figure, and a -3 that the right hand adjective applied. Intermediate ratings were used according to the degree of appropriateness.

The measure of cognitive complexity derived from this grid is considered to be an indication of the subject's degree of differentiation of dimensions for judging behavior. The more independent dimensions of judgement he has available, the greater his degree of cognitive complexity.

The procedure adopted for computing scores from the grid was that described by Bieri *et al.* (2). Each rating in a row was compared with all the ratings occurring immediately below it (i.e., ratings for the same role figure) in the grid. Where there was an exact agreement between the ratings, a score of one was given; where the ratings did not agree exactly, no score was given. This procedure was carried out for each role figure, the total number of agreements being the score for the grid, which is an indication of the degree of similarity between the subject's dimensions of judgement. The higher the subject's score for the grid, the fewer independent dimensions of judgement he displays, and the lower his complexity. High scores on the grid will therefore be referred to as low complexity scores.

In the present experiment, the grid for each subject was divided into four matrices. These were comprised of the ratings for positive role figures on evaluative traits; ratings of negative figures on evaluative traits; ratings of positive role figures on nonevaluative traits; and ratings of negative role figures on nonevaluative traits. Each matrix thus had five rows (traits) and five columns (role figures). Grid scores were computed for each matrix, and could vary from zero to 50, with zero indicating high complexity and 50 low complexity.

C. RESULTS

Scores were cast in a $2 \times 2 \times 2$ table, and a Type III (6) mixed design analysis of variance was carried out, the three factors being sex of subjects, valence of figures, and type of traits. The means and standard deviations of scores in each condition are given in Table 1.

TABLE 1
MEANS AND STANDARD DEVIATIONS OF COMPLEXITY SCORES FOR POSITIVELY AND
NEGATIVELY VALENCE FIGURES ON EVALUATIVE AND NONEVALUATIVE TRAITS

Subjects	Positive figures		Negative figures	
	Eval. traits	Noneval. traits	Eval. traits	Noneval. traits
Male				
Mean	23.2	11.6	14.4	12.4
SD	6.8	3.9	4.9	4.4
Female				
Mean	28.2	12.6	12.7	10.9
SD	9.5	5.0	5.4	3.9

Note: High scores indicate low complexity.

The F ratios for the main effects for type of trait and valence of figure were significant ($F = 147.2$; $df = 1,58$; $p < .001$; and $F = 96.0$; $df = 1,58$; $p < .001$, respectively), but there was no significant main effect for the sex variable. However, the three hypotheses were all tested by the type of trait \times valence of figures interaction, which was significant ($F = 75.4$; $df = 1,58$; $p < .001$). The first hypothesis predicted lower complexity scores for positive than for negative figures on evaluative traits, and this was supported ($t = 12.8$; $p < .001$). The second hypothesis predicted that there would be no difference in the complexity scores between positive and negative figures on nonevaluative traits, and this is also supported ($t = .45$, n.s.). The third hypothesis, which predicted that for positive figures the complexity scores derived from evaluative traits would be lower than those based on nonevaluative traits, was also supported, the difference being highly significant ($t = 14.3$; $p < .001$). For negative figures, the difference did not reach the customary level of significance ($t = 1.95$, n.s.).

There was one further significant interaction F ratio in the analysis of variance, which was for the sex \times valence of figure interaction ($F = 12.7$; $df = 1,58$; $p < .001$). Tests of the differences between means revealed that all means were significantly different from each other. Women had lower complexity scores than men for positive figures, but higher complexity scores for negative figures. For both sexes, complexity scores for positive figures were lower than for negative figures.

D. DISCUSSION

All three predictions were clearly supported by the data. On evaluative traits complexity scores for positive figures were significantly lower than those for negative figures. This replicates the results of Irwin *et al.* On nonevalua-

tive traits there was no significant difference between the complexity scores for positive and negative figures. According to the "vigilance" hypothesis, subjects need to isolate and differentiate threatening negative figures. The failure to obtain differences between the complexity scores of positive and negative figures on nonevaluative traits raises doubt about the validity of the "vigilance" hypothesis, or at least about its generality across all traits. It could still be argued that the more complex perceptions of negative figures should occur only on those dimensions relevant to the affective dimension: namely, evaluative traits. If this were the case, the complexity scores for negative figures should be greater when they are based upon evaluative traits than when they are based upon nonevaluative traits. However, in the present experiment, not only were the complexity scores for negative figures on evaluative traits no higher than on nonevaluative, they were also no higher than the complexity scores for positive figures on nonevaluative traits. The one set of complexity scores markedly different from the rest are those for positive figures on evaluative traits, which the vigilance hypothesis would not readily predict.

An alternative hypothesis offered here is that the results are a special case of the Pollyanna hypothesis.

When subjects designate a role figure as a person they like (a favorable judgement), they are more likely to rate him favorably on evaluative traits than unfavorably. In the case of a role figure who is disliked, subjects may make more unfavorable ratings on evaluative traits than favorable ratings, but there is a greater likelihood of disliked figures being rated favorably than of liked figures being rated unfavorably. As a result, the similarity between the ratings on evaluative traits for liked figures is greater than the similarity for negative figures, and complexity scores are lower for positive than for negative figures.

A difference in complexity scores between negative and positive figures does not, in itself, show that subjects are more likely to rate negative figures favorably than they are to rate positive figures unfavorably. However, this assumption can be tested by examining the ratings of figures in the grid. There were 25 ratings of positive figures and 25 ratings of negative figures on evaluative traits. If ratings of +1, +2, and +3 are regarded as favorable ratings, and ratings of -1, -2, and -3 as unfavorable ratings, the mean number of unfavorable ratings for positive figures was .8 and of favorable ratings for negative figures was 9.1, thus supporting the assumption.

The sex by valence of figure interaction is consistent with Warr's (8) finding of sex differences in the tendency to make Pollyannaish judgements.

In his study, women were found to make stronger inferences to positive traits, and weaker inferences to negative traits than men. Women should therefore show a stronger tendency to rate positive figures uniformly favorably, and negative figures less uniformly unfavorably than men. The complexity scores obtained for men and women on positive and negative figures are consistent with this.

One advantage of this interpretation is that it enables the results by Irwin *et al.* to be reconciled with those by Crockett (4). He argued that his subjects provided more constructs in the description of positive than of negative figures because of their degree of familiarity. The Pollyanna hypothesis would predict that evaluatively positive qualifiers (presumably used to describe people who are liked) should be more readily elicited than evaluatively negative qualifiers (presumably used to describe people who are disliked).

Such a reconciliation does not necessarily imply that measures of cognitive complexity can be reduced to the Pollyanna effect. For most measures of individual differences in cognitive complexity, subjects are normally required to respond to both positive and negative affective stimuli. In free description measures, such as Crockett's, complexity will be related to verbal fluency, and the ability to think of both favorable and unfavorable adjectives for positive and negative figures, all of which are scored as independent constructs.

In measures based upon similarity of ratings complexity scores will be related to general evaluative consistency (7), which will include consistency in rating on undesirable traits, as well as consistency on desirable traits. The Pollyanna hypothesis applies only to the latter. Nevertheless, there is some indication that the number of positive ratings in a grid is negatively correlated with complexity scores (9), which suggests that it is positive consistency (Pollyanna effect) that is the major contributor.

E. SUMMARY

This experiment tested the hypothesis that the complexity scores obtained from a grid measure would be lower for positively valued figures than for negatively valued figures only on evaluative traits. On nonevaluative traits it was hypothesized that no such differences would occur.

The results supported the hypotheses, and were interpreted as being consistent with the view that the complexity scores thus derived reflected the operation of the "Pollyanna" effect in person perception, and that this may reconcile previous apparently conflicting results.

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Department of Psychology
University of Aberdeen
Aberdeen AB9 2UB
Scotland



ATTITUDE-BELIEF AND ATTITUDE-BEHAVIOR CONSISTENCY*¹

University of California, Berkeley

WILLIAM H. BRUVOLD

A. INTRODUCTION

In an earlier article related to the work of Insko and Schopler (4) and Anderson and Fishbein (1), Bruvold (3) presented an hypothesis regarding consistency between beliefs, behavior, and attitudes and also some data bearing upon the newly stated hypothesis. Essentially the data indicated that while consistency between specific behavior patterns and attitudes was not always statistically significant, substantial consistency between behavior and attitudes was obtained when several behaviors were considered combinatorially. The same pattern of results was obtained for beliefs and attitudes. The aim of the present paper is twofold: to extend the earlier consistency hypothesis in light of the new data, and to report results from survey research performed specifically to test the elaborated hypothesis.

Attitude, belief, and behavior, as well as attitude-belief and attitude-behavior consistency, are defined in the earlier article (3). These definitions will not be repeated except to point out that belief, attitude, and behavior are given independent definitions, that each may be separately assessed without reference to the other two, and that attitude is seen as continuous, while behavior and belief are treated as dichotomies. Consistency determination involves analysis of belief and behavior accomplished independently of the individual.

These conceptions lead to the following general hypotheses. First, individuals whose behavior in a particular setting is positive toward an object will have more favorable attitudes toward it than will individuals whose behavior toward the object in that setting is negative. Second, it follows that if behavior settings are independent, attitude toward an object will become more favorable as the number of positive behaviors increases. Third, individuals ascribing to a belief classified as positive will have more favorable

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attitudes toward the attitude object than will those ascribing to the associated belief classified as negative. Finally, it also follows that if beliefs are independent, attitude toward an object will become more favorable as the number of positive beliefs increases.

The research here reported dealt with behavior, beliefs, and attitudes about water reclaimed from community sewage by advanced technological procedures. Specifically, reclaimed water was used for irrigation of a golf course open to the public, to fill recreational lakes in a public picnicking-boating area, and to supply a public swimming pool. The first specific hypothesis of this study is that users of a reclamation facility will have more positive attitudes toward reclaimed water than will nonusers. Secondly, it is hypothesized that attitudes will become more favorable as the number of facilities used increases.

Beliefs regarding extent of water pollution, need for new water supply, and the propriety of scientific *versus* natural methods for water purification were dealt with in the present research. Beliefs that water pollution was widespread, that new water supply was needed, and that science, rather than nature, provides the better method of water purification were classified as positive (3). The third specific hypothesis predicts that individuals holding a positive belief will have more favorable attitudes toward reclaimed water than will those holding the associated negative belief. Finally, it is hypothesized that the higher the number of positive beliefs, the more favorable the attitude toward reclaimed water.

B. METHOD

1. *Selection of Respondents*

The Southern California community dealt with by this research was unincorporated. Thus, an arbitrary geographical boundary was drawn around the populated area surrounding the golf course, lakes, and pool. All dwelling units within the area were listed along a continuous serpentine line and 104 were selected from the total of 1455 by random start systematic sampling. Respondent selection involved a census of the selected households and the random selection of one adult residing in each. Of the 104 selected respondents, 99 participated fully in the research. No attempt was made to obtain substitutes for the five individuals who refused participation.

2. *Behavior and Belief Assessment*

A series of detailed structured questions was used to assess the respondent's behavior, and that of all other members of his household, regarding the pool, the park, and the golf course for the year preceding the survey. The usage

questions were followed by questions regarding the source of the water used to supply each of the three recreational facilities.

Beliefs were assessed by semistructured questions after some discussion of each issue covered. First, the interviewer read a carefully balanced statement regarding currently held beliefs about the extent of water pollution, the need for new water supply in Southern California, or the proper method for purifying water. The respondent was then asked to describe his own belief regarding the issue at hand. Belief statements were coded as in the earlier study (3).

3. *Attitude Assessment*

Attitude toward reclaimed water for noningestive, close-contact use was assessed by a Thurstone-type scale (2). It is most important to emphasize that the scale was comprised of items dealing only with affective response toward the use of reclaimed water. Items containing belief statements or implications were deliberately excluded from the item pool during the scale construction process.

4. *Interview Procedure*

No mention was made of reclaimed water during the first contact, or during the first interview session which involved behavior and belief assessment. During the second session, which was given approximately four weeks after the first in an effort to combat superficial response consistency, reclaimed water was fully and specifically defined for each respondent followed by administration of the attitude scale noted above. The same highly qualified and experienced interviewer, working under the auspices of the State of California, administered all interview forms and scales during the Winter of 1971.

C. ANALYSIS AND RESULTS

Behavior regarding the attitude object in each of the three settings was classified into a positive or negative category on the basis of the initial series of questions comprising the first interview session. These results are shown in Table 1. Usage means that either the respondent himself, or one or more of the respondent's children, or both, used the facility one or more times during the year preceding the study with the respondent's knowledge that the source of water supplying the facility was community sewage. The extension of usage to include the respondent's children was deemed necessary for the most proper analysis of the swimming data, since parents often ac-

accompanied their children to the pool but infrequently joined them in the water. Knowledgeable personal use by the respondent himself occurred for nine of the 33 cases given a positive classification for swimming. Analogous figures for boating and golfing were 66 of 70, and eight of 12, respectively. Attitude scale means by dichotomous usage category are shown in Table 1 for the three behavior settings. An F ratio was computed for each of the three comparisons with no significant differences obtained.

The classifications of belief regarding water pollution, need for water, and purification methods were used to divide attitude scores toward each use of reclaimed water into two groups yielding the comparisons shown in Table 1. The belief classified as positive was listed second in all Table 1 comparisons. Differences between means were tested by an F ratio with significant results obtained only for purification ($F = 10.05$, $1/97$ df , $p < .01$).

Independence of the three behavior and of the three belief classifications was tested by means of a chi-square contingency analysis (5). None of the three contingency coefficients for behavior classifications, and none of the three for belief classifications, was significantly different from zero.

Relationships of the number of positive behavior settings with attitudes, and the number of positive beliefs with attitudes, were analyzed by means of the linear trend procedure recommended by McNemar (5) for use with a one-way analysis of variance. Trends for both behavior and belief analyses were significant (behavior $F = 5.04$, $1/97$ df , $p < .05$; belief $F = 8.57$, $1/97$ df , $p < .01$).

D. DISCUSSION

Taken as a group, the specific predictions of Hypotheses 1 and 3 were given only a modicum of support by the current research. This outcome is similar to that obtained in the earlier study (3). For Hypothesis 1, all three outcomes were in the predicted direction with no difference showing statistical significance. All expected outcomes for Hypothesis 3 were also in the expected direction with one exceeding customary significance levels. Thus, the predicted relationships between either a specific belief and attitude, or between a specific behavior setting and attitude, while always observed, were not usually statistically significant.

Stronger support was obtained for the specific predictions of Hypotheses 2 and 4, as indicated by the results presented in Table 1. Therefore, when taken together, a substantial relation between a number of positive beliefs and attitude, or a number of positive behavior settings and attitudes, was observed. These results suggest that past failures to find consistency between

TABLE 1
ATTITUDE SCALE MEAN SCORES

Behavior	N	M	Beliefs	N	M
Use of pool			Pollution serious		
No	66	7.40	No	26	7.08
Yes	33	8.01	Yes	73	7.78
Use of park			Need for water		
No	29	7.23	No	47	7.43
Yes	70	7.75	Yes	52	7.75
Use of course			Water purification		
No	87	7.57	Nature	41	6.98
Yes	12	7.82	Science	58	8.04
Number of positive behaviors			Number of positive beliefs		
0	23	6.99	0	8	5.36
1	41	7.58	1	26	7.72
2	32	8.02	2	37	7.70
3	3	8.01	3	28	8.00

beliefs and attitudes, or between behavior and attitudes, may be explained by the failure to examine carefully a larger segment of beliefs and behaviors related to the attitude under study.

Thus, it may be stated that the present results gave considerable support to the elaborated consistency hypothesis here proposed. Further theoretical development may now involve refinement of belief and behavior conceptions, work on a more complete specification of attitude-belief and attitude-behavior consistency, and a statement concerning the relative contribution of beliefs and behavior to attitudes toward an object. In regard to the last point, the present data suggest that beliefs had a greater relation to attitudes than did behaviors. It is interesting to note that Insko and Schopler (4) hold that behavior will have a greater effect upon attitude formation and change than will beliefs. The present data do not seem to confirm this notion. However, number of positive behaviors showed a significant relationship to attitude scale scores, posing for future work the interesting question of the relative effect of belief and behavior upon attitudes.

E. SUMMARY

An hypothesis of attitude-belief and attitude-behavior consistency was stated, which included consideration of a number of topically distinct beliefs

and different settings in which attitude related behavior occurs. The hypothesis was tested by survey research data involving water reclaimed from community sewage by advanced technological procedures. Specific attitude-belief and attitude-behavior relationships, while generally not statistically significant, were as predicted by the hypothesis. Further, as predicted, attitudes toward reclaimed water became significantly more favorable as the number of positive beliefs, or behaviors, increased.

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School of Public Health
University of California
Berkeley, California 94720

EMPATHY AND COMMUNICATION EFFICIENCY*¹

Department of Sociology, State University of New York at Stony Brook

EUGENE WEINSTEIN, KENNETH A. FELDMAN, NORMAN GOODMAN,
AND MARTIN MARKOWITZ

A. INTRODUCTION

Although there has been some empirical testing of hypotheses generated by the symbolic interaction approach of George H. Mead (8), as well as consequent data-based refinement of the theory [see, for example, selected articles in (4, 7, 9, 13)], the efforts in these directions are still numerically sparse and quite overshadowed by material not particularly grounded empirically in any systematic way. We see the present study as another step in the attempt to redress this imbalance.

Central to the thinking of Mead is the concept of "taking the role of the other" (8, p. 254). Role taking in its broadest form is a process of anticipating another's behavior by viewing it in the context of a role imputed to that other. More specifically, role taking refers to the imaginative reconstruction by ego of alter's role (1, 11, 15). The concept of role taking is similar but not identical with that of empathy (14, 15). In the process of role taking one makes certain inferences about the other's inner experiences and, in a sense, attempts to be for the moment that someone else. Empathy, as we are using the term, refers to the *accuracy* of this process—that is, the degree of similarity between the role taken and the actual role of the other. The ability to role-take accurately, or empathize, is the ability to see, feel, respond, and understand as if one were the other person. Of course, one is *not* the other person. Empathy is thus different from identification; ego retains his own perspective, although he may experience a remarkable sense of closeness or sameness with alter (5, 6, 15).

The nature of communication among persons influences the nature of their role taking, and *vice versa*. Regarding the latter relationship, it may be postulated that the more empathic two people are with one another, the more short-circuited or "efficient" their communication. That is, the more two

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people are able to take accurately each other's role (to "tune in" to one another) the fewer the communicative units that are required to transmit information or meaning between them.

Although role taking is a universal process, some people are better at it than others; nor is any given person equally empathic with everyone or even with the same other person in all situations. Variation in empathy, however, is due to more than differential distribution of particular innate gifts. There are social conditions that make it more or less easy for ego to empathize with alter. For example, it might be supposed that the more experience ego has had with alter, or the more similar their social backgrounds, the greater is ego's ability to take the role of alter—and, thus, the greater is the degree of accuracy of his role taking.

In our view, it is this increase in role-taking accuracy that allows us to interpret the commonly observed relationship between the sharing of a culture or subculture and the ease and efficiency of communication (10, 12). Persons who share the values and norms of a common culture are able to use information that is particular to that culture. By having this specific knowledge and by sharing a common context of discourse, people are able to take the role of the other more easily and accurately in specific situations, which in turn leads to more efficient communication among them. Moreover, this communicative efficiency should occur most frequently in those areas that are central to their common involvement. If the ability to take the role of the other accurately is viewed developmentally (2), then people who have undergone the same experiences or who have been socialized within the same categories (e.g., similar occupations, similar type of education) should have a greater degree of empathy with one another than with others (16). This should promote, as a consequence, the efficiency of their communication. By signalling that there are common aspects of identity, ego makes it clear to alter that some of the social processes they both have undergone are the same or similar. The recognition and use of this commonality of experience enables people to take each other's role more easily, thereby eliminating many alternatives within their cognitive fields and increasing the rapidity and accuracy with which they are able to deal with relevant issues.

Some of the above propositions were empirically tested by Goodman and Ofshe (3), by measuring the communication efficiency of married couples, engaged couples, and strangers (of opposite sex) on family-related and general words. The present study attempts to gather additional support for certain specific hypotheses about the relationships of shared cultures to role taking and the efficiency of communication. In this case, the social categories that lead to

shared cultures are friendship-status and religion. In general terms, the hypotheses of the study are the following:

(a) Friendship pairs show greater communicative efficiency than pairs of strangers.

(b) In areas relevant to a particular religion, pairs who share that religious identity communicate more efficiently than pairs who do not.

(c) This greater communicative efficiency hypothesized in (b) is due to the use of cues related to the common religious experience.

B. METHOD

1. Subjects

Sixty-four female students were chosen from an Introductory Sociology course of more than 500 students at the State University of New York at Stony Brook. More than 90 percent of the class were freshmen. Each student was asked to fill out an information sheet that asked for, among other things, her age, parents' religious affiliation, and the names of her five closest friends in the class. Students were matched in the following ways: Eight pairs (dyads) of Jewish friends; eight pairs of Jewish strangers; eight pairs of Catholic friends; and eight pairs of Catholic strangers. In forming these dyads, the friendship dyads were reserved for those pairs of persons who named each other as a friend. In all cases, subjects were made aware of the religious identity of their partner in the procedure described below. We purposely chose all female subjects in order to eliminate (possible) sex differences, such as those found by Goodman and Ofshe (3).

2. Procedure

Following the procedure developed by Goodman and Ofshe (3), a variation of the television show "Password" was used as a strategy for studying communication efficiency in the dyad. The subject's task was to get her partner to guess the goal word by using one-word cues (contingent after the initial cue on her partner's response); hyphenated words and forms of the goal word (e.g., collect as a cue for collective) were not allowed. No other verbal communication was permitted.

Before the game began, each subject was given her own information sheet and told the following: "We are giving you each some information about yourselves that we asked for several weeks ago in Sociology 103. Please check these sheets to see if they are correct. Now exchange sheets. Pay particular attention to any similarities in background. This information may help you while playing the game."

The subjects went through the cue-response sequence until either the goal word was guessed or the limit of 10 cues and 10 responses was reached. If the goal word was not guessed, the experimenter revealed the goal word, and a new sequence began. If the "catcher" did not respond to a cue within 10 seconds, or if the "pitcher" of a cue took more than 10 seconds, the experimenter asked the "catcher" to try another guess or "pitcher" to try another cue.

Eight words were used as goal words, with each member of the dyad alternating as pitcher and catcher. To test the salience of religion, four of these words had meanings that could be interpreted from either a general cultural perspective or a more specific (religious) subcultural perspective: *mass*, *cross*, *confession*, and *lent*. The four general cultural words were *tickle*, *frame*, *symphony*, and *energy*. Each member of the dyad pitched and caught two double-meaning words and two general cultural words.

The order of the presentation of the four words in each of the two sets was randomized, as was the choice of subject to begin the game. Four different experimenters conducted the 256 games played, and each of them was assigned randomly to eight pairs of subjects. Each experimenter conducted the experiment with two pairs of dyads from each of the four categories under consideration.

The measure of communicative efficiency employed for all words was the actual number of cues given. All blanks on the part of the pitcher (i.e., no verbal cue within a 10-second period) were counted as cues. Thus, a low score indicated greater communicative efficiency and presumably more accurate role taking.

The ratio of subcultural (religion-related) cues to total cues for each particular subcultural word was recorded in order to study the possible mediating process of the words with dual meanings (*cross*, *mass*, *lent*, *confession*). This procedure made it possible to assess both the efficiency and the extent to which the subcultural mode was employed by all four groups in reaching the four goal words. For example, if five cues were needed to get the word "*lent*," and three of the five were related to religion, a score of .600 was assigned to the dyad for that word.

C. RESULTS AND DISCUSSION

Results of an analysis of variance of communicative efficiency scores are shown in Table 1. The data do not support the hypothesis that friends communicate more efficiently than strangers. The difference is slight and not statistically significant (mean number of cues used: Strangers, 3.8; Friends, 4.1). This finding could be due to the lack of words directly associated with

TABLE 1
ANALYSIS OF VARIANCE OF COMMUNICATIVE EFFICIENCY SCORES

Source of variation	df	MS	F
Between subjects			
Religion	1	107.6	5.22*
Friendship	1	5.6	
Religion \times Friendship	1	1.0	
Error between	28	20.6	
Within subjects			
Word type	1	1.2	6.77**
Religion \times Word type	1	41.3	
Friendship \times Word type	1	.1	
Religion \times Friendship \times Word type	1	23.4	3.84
Error within	220	6.1	

* $p < .05$.

** $p < .01$.

a friendship relationship. By the nature of the general words (*symphony, tickle, frame, energy*) the friendship tie between dyad members probably was unimportant. These words were unlikely to be central to the dyad in any way. Unlike the Goodman-Ofshe study, where the ability to guess family-related words is indeed a function of being part of a married or engaged dyad, the nature of our general words did not signal the dyad members to make use of one of the important attributes of their relationship: namely, friendship. In an examination of the actual cue-response sequences, we were able to find only one clear-cut instance of friendship-status being brought into play to facilitate efficiency. The members of the friendship dyads were not able to bring the words into a particular universe of discourse and had to go through the sequences of cue-response as if their friendship did not exist for this particular task.

Our second hypothesis, in specific terms, was that Catholics would communicate more efficiently than Jews on religion-related words. With respect to the mean number of cues required, the difference between the two religious groups on general words (Jews, 4.2; Catholics, 3.7) was not as large as the difference between them on religion-related words (Jews, 4.9; Catholics, 2.9). Analysis of simple effects shows that the overall difference between Jews (4.6) and Catholics (3.3) was due to the difference in religion-related words only, thus supporting our second hypothesis. (For religion-related words, $p < .01$; for general words, $p > .05$.)

A clear implication of our theoretical argument is that greater empathy of Catholics on potentially religion-related words would be due to the greater

saliency of the church to them; hence the greater likelihood that they would employ religion-related cues. In fact, Catholics did use a significantly greater proportion than Jews although a majority of the clues of both Catholic and Jewish dyads were religion-related. While 88 percent of the cues used by Catholics for religion-related words fell within a religious frame of reference, 65 percent of the cues used by Jews on these words were church-related ($t = 6.34, p < .01$).

Our contention is that the understanding of, and previous relationship with, church-related words made it possible for members of the 16 Catholic dyads to use these words effectively; as a result of the "mutual conditioning" of the two members of the dyad (3, p. 599), they were able to tap into a pool of common knowledge in arriving at the goal words. Take for example the following sequence to arrive at the word "lent": *cues by pitcher*—1) advent, 2) Easter; *responses by catcher*—1) Christmas, 2) Lent. The Catholics in our study, like the married couples in the Goodman-Ofshe study, appear to rely on their partner's understanding of specific reference in terms of a shared context.

The use of religion-related cues enhanced communication efficiency as reflected in the correlation of $-.64$ for all dyads.² (Since high levels of communication efficiency are reflected by a low score, the correlation is negative.) But, even more important, Jews were not able to make as effective use of church-related cues as were the Catholic subjects. This is reflected in the differences in the correlation between the use of religion-related cues and communication efficiency for the two religious groups (for Catholics, $r = -.77$, for Jews, $r = -.24$). When examining the actual sequences of cues and responses within the Jewish dyads, we often could see that as one member of the dyad was attempting to communicate a religion-related word by the use of religion-oriented cues, her partner evidenced little or no familiarity with that particular universe of discourse. Consider the following as one instance. (This particular catcher was more effective on non-religion-related words so that the example is not based simply on her being generally poor at role taking.) Cues given off by the pitcher were as follows: 1) Easter, 2) before, 3) Catholic, 4) fasting, 5) Easter, 6) before, 7) Catholic, 8) day, 9) period; the catcher responded "eggs" to the first cue and "lent" to the ninth, with seven

² It should be noted that this correlation is artificially inflated. It is a form of index correlation, since the number of cues appears in both variables: i.e., $r_{y(x/y)}$. By chance alone, such a correlation would tend to be negative. To preserve independence of observations, the average proportion of religion-related words for the dyad was correlated with the average number of cues necessary to get the goal word. Thus $n = 32$ (the number of dyads).

nonresponses in between. We interpret this sequence and similar cases as a breakdown in the communication process due to an undeveloped framework of shared experience and information within the dyad. Cues were wasted by the pitchers in their attempt to get their partners to deal within a religion-related frame of reference. Even when Jews used religion-related cues, sequences often took longer than the time needed by Catholic dyads using religion-related words. Frequently, the Jewish dyads had to stop their approach of using religion-related words and begin employing a more general cultural mode of attack.

Our third major hypothesis implies that the scores of both Catholics and Jewish dyads would be the same if the use of the subcultural cues were controlled. An analysis of covariance was undertaken based on the within-religion regressions of communication efficiency on proportion of religion-related cues. The religion group means, adjusted on this basis, no longer differed significantly, thus supporting the final hypothesis.

D. SUMMARY AND CONCLUSION

Empathy (accuracy in taking the role of the other) was held to be affected by the extent and relevance of common experiences between members of a dyad. It was argued further that one basis for more efficient communication is more accurate role taking. A form of the television game "Password" was used to provide a measure of communication efficiency. It was administered to 32 pairs of female subjects, drawn from classes of Introductory Sociology. Of these, 16 pairs were friends and 16 were strangers; within each of these groups, eight pairs were Jews, and eight were Catholic. Each dyad played eight games of "Passwords." In four of the games, words were used that had general cultural relevance. The other four words could be approached from either a general or religious frame of reference. In addition to counting the number of cue words needed to ascertain every goal word, the proportion of religion-related cue words was determined for the dual-meaning goal words.

Three specific hypotheses were tested: (a) Friends communicate more efficiently than strangers; (b) Catholics communicate more efficiently than Jews on religion-related goal words; (c) the superior performance of Catholics is due to their more frequent use of religion-related cues.

Hypothesis (a) was not supported by the data. Hypothesis (b) was confirmed, with Catholic dyads communicating more efficiently than Jews on religion-related words but not on the general words. Hypothesis (c) was also confirmed; not only did Catholics use a significantly larger proportion of

religion-related cues, they also used such cues more effectively. As predicted, when the use of religion-related cues was controlled, the difference between religious groups no longer was statistically significant.

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Department of Sociology

State University of New York at Stony Brook

Stony Brook, New York 11790

THE EFFECT OF INCREDULITY UPON EVALUATION OF THE SOURCE OF A COMMUNICATION*

Department of Psychology, University of California, Riverside

RAMON J. RHINE AND ROBERT M. KAPLAN

A. INTRODUCTION

What happens to the credibility of a communicating source who makes an incredible assertion? An assertion is credible to the degree that it is believable and incredible to the degree that it is not believable. Changes in credibility following an incredible assertion should be a joint function of expectations about the source and the attributes upon which his credibility rests.

Source credibility may be defined either as beliefs about the source's prestige or about his authoritativeness. Credibility based on prestige refers to a source who is highly or less highly regarded by virtue of his perceived social position. A person who is authoritative about a particular issue is one who is thought to be a knowledgeable expert. If a source who is neither prestigious nor authoritative takes an incredible position, not very much is expected of him and, therefore, there is little reason to devalue him when he behaves true to form. If the source is both prestigious and authoritative, and he makes an incredible statement, he should remain relatively invulnerable because he is protected by his expertise. *The source whose credibility should be most vulnerable is one who neither lives up to expectation nor is protected by expertise.* Within the present context, the source who is prestigious but not authoritative should be the most vulnerable.

When an expert makes a disbelieved statement, a cognitive inconsistency occurs which may be alleviated in several ways. Some of the ways previously considered in psychological experiments are changing one's own beliefs, derogating the source of the statement, and downgrading the importance of the issue (1, 8). In addition, excuses might be used to rationalize the inconsistency: "He is being sarcastic," "It is a misprint," etc. The use of excuses as a response to source-message inconsistency was investigated in the experiment described below.

Neither a reduction of the issue's importance nor derogation of the source's credibility have been demonstrated to alleviate cognitive inconsistency due to

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opinion disagreement. Recent evidence indicates that importance tends to increase instead of decrease in attitude-change research (7, 8). For reasons described previously (8), results attributed to derogation have been inconclusive. For example, Bochner and Insko (3) believed their mildly credible source was derogated. They checked the credibility of their sources by comparing mean ratings of highly and mildly credible sources made by subjects who did not receive the experimental manipulation. These means may be used as baseline credibility ratings to assess the effects of the experimental manipulation on source credibility. After the experimental manipulation, the credibility of the mildly credible source, contrary to the authors' interpretation, was improved instead of derogated for 18 out of 18 independent groups. From the binomial, this result would be expected by chance once out of 262,144 trials.

B. METHOD

1. *Subjects and Design*

Experimental subjects were 180 undergraduates attending the University of California, Riverside. They were randomly assigned in equal numbers to the 18 cells of a $3 \times 3 \times 2$ independent groups design. The factors of the design were three levels of discrepancy between the subjects' own position on an issue and a position communicated to them, three levels of credibility of the sources of the position communicated, and two different orders with which questionnaire data were obtained. In addition to the experimental subjects, 82 Riverside undergraduates were distributed almost equally among three control groups.

2. *Procedure*

The attitude issue was the amount of sleep needed for maximum health and well-being. The issue was chosen for four reasons: (a) as it was used previously by Bochner and Insko (3), it provides some basis for comparison with available data, (b) a position in respect to the issue can be stated unequivocally as a single number, (c) the sleep issue has finite limits, and (d) ordinary experience causes virtually every normal person to regard the extreme positions—never waking or never sleeping—as thoroughly incredible.

The research scene was set by describing a fictitious experiment of an equally fictitious Stanford professor. Subjects were led to believe that a questionnaire was being administered for Professor Philip L. Carter of the Stanford University School of Journalism. It was explained in written instructions that Carter was doing a study of ideas communicated by letters to the editor

and also of ideas the letters communicated about the writers themselves. The subjects were told that letters to be judged appeared in a large newspaper in response to a controversial article about the number of hours of sleep people needed per night for maximum health and well-being. Carter was said to have received permission to interview all the newspaper employees who handled letters, including the person who selected the letters for publication, the one who shortened them when only part could be published, and even the men who operated the printing machinery. Subjects were told that Carter had obtained the cooperation of various letter writers whom he interviewed to determine exactly what they had meant to communicate in their letters. Subjects were also told that many writers had agreed to take a well-known personality test. Together with the interview, this test was said to give Carter a good estimate of a few main traits of the letter writer's personality. Subjects were informed that they would receive a summary of one of the letters. They were told that summaries were used because the experiment dealt with judgments of communication qualities and not with extraneous things such as the letter's length or style. It was explained that after students judged what the letter communicated both about the sleep issue and the writer, Carter would be able to compare the information he already had with ideas the letter communicated to intelligent readers.

The written instructions were attached to the front of a four-page questionnaire. The first page of the questionnaire was titled "Summary of a Letter to the Editor." After a brief repetition of the sleep issue, the subject read a two-sentence paragraph mentioning that the letter was signed with the writer's name and occupation, and indicating that Carter had verified the accuracy of the specified occupation. Then the letter summary was given. An example summary is as follows:

"The professor's letter starts by taking issue with the views of some of the people interviewed by the reporter who wrote the article. The professor gives a number of reasons why he thinks these views are false. Next, he gives his opinion about the pros and cons of several letters to the editor that were already published and that discussed the matter of sleep needed per night. Then he gives his own views in general terms and discusses several ways in which he thinks that the amount of sleep one gets affects health and well-being. Finally, the professor's letter ends with his two main points. First, he claims that the widely accepted idea that people need eight hours of sleep is a myth. Second, taking the actual wording of the last sentence of his letter, the professor strongly advocated that 'for maximum health and well-being a person should get six hours of sleep per night.'"

The letter summary is designed to introduce a source and a discrepancy without giving persuasive arguments. It is quite general. No reasons are given to support the writer's opinion. If the last sentence were deleted, the subject would not know the writer's position.

The material just described was identical for all experimental subjects except for changes required to manipulate the independent variables of source and discrepancy. In Carter's verification of the writer's occupation, the letter was attributed to one of three sources: (a) "a professor of law at a very good university and a quite well known authority on constitutional law"; (b) "a professor of biology at a very good university and a quite well known authority on the physiology of sleep"; and (c) "a private first class in the U. S. Army assigned to the motor pool." For this latter source, "private" was substituted for "professor" in the letter summary. The biologist was meant to be both a prestigious and authoritative source; the private was neither authoritative nor prestigious; and the lawyer was expected to be prestigious but not authoritative. Discrepancy between the subject's and the source's position was varied by using zero, four, or six hours in the last sentence of the summary stating the writer's opinion. Zero hours was included to introduce the incredible position of no sleep at all.

The second page of the questionnaire followed the letter-summary. It contained five questions. The first three were introduced to reinforce the authenticity of the letters. They asked in turn: (a) "Did you read the actual newspaper article in which the amount of sleep was discussed?" (b) "Have you read in the newspaper any of the actual letters to the editor commenting on sleep?" and (c) "If you checked 'yes' to the last question, did you read in the newspaper the actual letter that was summarized for this study?" No subject answered "yes" to any of these questions. The fourth question asked the subject to specify the number of hours of sleep advocated by the letter writer. This question was placed just before the fifth, which asked for the subject's own opinion, so the discrepant position would be clearly in mind when the subject indicated on a 17-point scale the amount of sleep he considered necessary for health and well-being. This scale ranged in integer steps from zero to 16 hours of sleep.

The independent variable of order was manipulated by measuring the two main dependent variables on the third and fourth pages of the questionnaire. These two dependent variables were willingness to endorse rationalizing excuses and changes in source credibility. For half of the subjects, data on willingness to endorse excuses were obtained from the third page and source

evaluation from the fourth. For the remaining subjects, the order was reversed.

There were four opportunities to rationalize the writer's position. Responses for each were made on 13-point scales (zero to 12). Question one said, "In the rush to meet deadlines, a newspaper occasionally gets part of various printed columns mixed up. It is possible that the letter summary you read was inadvertently attributed to the wrong author. What is your best judgment about this?" The response scale went from "very probably the letter was attributed to the *wrong author*" to "very probably the letter was attributed to the *actual author*." Item two stated, "Do you think the letter writer meant what was published, or do you think he was making a 'tongue in cheek' or a sarcastic statement to communicate his position?" The response scale varied from "very probably he *meant what was printed*" to "very probably he was *being sarcastic or writing with 'tongue in cheek'*." Item three said, "If you read the letter in the newspaper it would be difficult to determine if the whole letter or only part of it was printed. Do you think in the case of the letter you read that it was a summary of a letter printed in whole or in part?" Responses could vary from "very probably the *whole letter* was printed" to "very probably *only part* of the letter was printed." The final item stated that "The number of hours of sleep per night was mentioned only once in the letter. It is possible that the number printed in the newspaper was an error or misprint. What is your best judgment about this?" Extremes of the response scale were "very probably the number was an *error or misprint*" to "very probably the number was *NOT an error or misprint*."

The remaining questionnaire items, presented on either the third or fourth pages of the questionnaire, gave subjects an opportunity to derogate or otherwise evaluate the source of the letter summary they received. Again all ratings were made on scales ranging from zero to 12. The first set of ratings indicated the subject's judgment of the prestige of six different occupations, including those of the three sources used in this study and three filler occupations. The next ratings indicated the authoritativeness of these same occupations in respect to the sleep issue. The third item asked for ratings of the letter writer on each of 15 traits presented in alphabetical order. There were three classes of traits, as follows: (a) intelligence traits (brilliant, educated, and intelligent); (b) character traits (deceitful, dishonest, sincere, truthful, honest, and untrustworthy); and (c) traits of personality (conceited, considerate, good-natured, phony, self-centered, and warm). The apparent evaluative polarity of these traits—for example, sincere is favorable and

conceited is unfavorable—was confirmed by normative ratings described previously (9).

Three control groups were run to provide an empirical baseline against which experimental data could be compared. Control groups made the same prestige and authoritativeness ratings as experimental subjects. One group rated the traits for the biologist, one for the lawyer, and one for the private. Control subjects also indicated their opinion about sleep needed.

C. RESULTS

1. *Manipulation Checks*

Manipulation checks were obtained by analyses of the control data. The biologist and lawyer were expected to be more prestigious than the private. While there were no differences among the three control groups on prestige ratings ($F = 1.09$), the three sources were judged to have the relative level of prestige anticipated ($F = 670.87$, $df = 2, 158$, $p < .001$). The mean ratings for the lawyer and biologist, respectively, of 10.37 and 8.96 did not differ¹ significantly, but both differed from the private's mean of 3.05 ($p < .01$ in both cases).

The authoritativeness of the biologist should be greater than that of the lawyer and private. It is possible that the lawyer's prestige will generalize and raise his authoritativeness above the private's; otherwise, no difference would be expected between the lawyer and private. Again, there were no differences among the ratings of the three control groups ($F < 1$), but there was a substantial difference in the ratings of the sources ($F = 249.45$, $df = 2, 158$, $p < .001$). The biologist's mean of 11.27 was greater than the lawyer's mean of 5.28 and the private's mean of 3.82 ($p < .01$ in both cases), and the private and lawyer did not differ significantly.

The three control groups did not differ in their judgments of the number of hours of sleep needed ($F < 1$). The mode of each of the groups is eight hours, the popular idea of hours of sleep needed. The mean of the combined groups of 7.84 may be compared with the mean of 7.89 reported by Bochner and Insko (3) for similar ratings.

The differences between the control subject's own position and six, four, or zero hours of sleep were expected to be significant. As the difference between the combined control mean of 7.84 and 6 is highly significant ($t = 28.75$, $p < .001$), the differences between 7.84 and 4 and zero are even more

¹ Throughout this research, where factorial analyses were statistically significant, individual comparisons were made by Duncan's (4) new multiple range test, unless otherwise specified.

significant. Evidence from both the control and the experimental groups bears upon the incredibility of the discrepancies. Of the 82 control subjects, six indicated that six hours of sleep were best for health and well-being, and none indicated fewer than six hours. Of the 180 experimental subjects, 16 favored six hours, two favored five hours, and none favored less than five hours.

One factor of the design was the order in which the subjects gave responses to excuses or other ratings. Order was taken into account in the factorial analyses of replies by experimental subjects to excuses, prestige, authoritative-ness, and ratings of the three sets of traits. Order produced no significant differences. The highest F for the six main effects due to order was less than one, and the largest of 18 interactions involving order yielded an $F = 2.60$, $df = 2,162$, $p > .05$. To simplify the presentation of the results, analyses given below do not include the order factor.

2. *Attitude Change*

There was no attempt to change attitudes about sleep by persuasive arguments. Attitude change can occur without a persuasive message after mentioning a discrepant position attributed to a particular source (5). A two-way analysis of experimental subjects' judgments of needed hours of sleep yielded a main effect associated with discrepancy ($F = 5.40$, $df = 2,171$, $p < .01$) and F 's less than one for variation among the three sources and interaction. The means for the biologist, lawyer, and private, respectively, are 7.80, 7.78, 7.70. The means for six, four, and zero hours of discrepancy, respectively, are 7.65, 7.58, and 8.05. While the absolute differences are small, indicating little influence relative to the amounts advocated, an even smaller error term produces significances at the .01 level between the mean for zero hours, which possibly represents a slight boomerang effect, and means of the remaining two discrepancies.

3. *Evaluation of the Sources*

The three control groups provide baseline data which make possible consideration of changes in source evaluation. For all the source-evaluation data, change scores were obtained by subtracting the mean of the relevant control group from each experimental subject's score. These change scores are presented in Table 1 so that a positive value always indicates a judgment of more of an attribute by the experimental than by control subjects: that is, more authoritativeness, more prestige, and more favorable ratings of traits. Conversely, a negative change score always indicates a decrease in the attribute

being measured: that is, derogation. With the use of change scores, a statistical test of a mean difference from zero is a test of a difference between control and experimental means.

Change scores in Table 1 for authoritativeness and prestige were obtained from each subject's rating of the source whose letter-summary he read. While the factorial analysis of authoritativeness changes yields no statistically significant results (Table 2), the mean changes are uniformly positive for all sources and all discrepancies. Prestige like authoritativeness is increased in most cases. The lawyer stands out because only his prestige dropped. The highly significant F associated with changes in prestige ratings is due primarily to a significant difference between the lawyer and the other two sources ($p < .01$ in both cases).

TABLE 1
MEANS FOR EXCUSES AND FOR CHANGE SCORES MEASURING SOURCE EVALUATION,
CATEGORIZED BY SOURCE AND DISCREPANCY

Measure	Source			Hours of sleep advocated		
	Biologist	Lawyer	Private	Six	Four	Zero
Personality	1.98	2.55	1.23	4.48	.51	.77
Intelligence	.95	-4.06	-.89	.15	-1.37	-2.78
Character	9.80	3.22	7.23	10.10	7.54	2.61
Authoritativeness	.48	.96	.28	.91	.36	.45
Prestige	1.45	-.54	.79	.78	.65	.28
Excuses	16.93	14.75	16.08	11.68	13.21	22.87

The three groups of traits—six character traits (e.g., honest), six personality traits (e.g., warm), and three intelligence traits (e.g., intelligent)—were analyzed separately. An individual's score for a given group of traits is the total of the responses to those traits. Scoring on negative traits was reversed so that a high rating was consistently favorable. Table 1 gives the mean changes for measures of source evaluation. As there were half as many intelligence traits as character or personality traits, the reader who wishes to make comparisons between the trait groups in Table 1 should double the means of intelligence traits.

Table 2 reveals several main effects reflecting differences due either to the source of the letter or to discrepancy. Like prestige, source effects for traits are associated primarily with the lawyer. Changes in intelligence ratings of the lawyer are significantly different from those of the biologist ($p < .01$) and the private ($p < .05$), but changes for the private and biologist do not differ significantly. Although character ratings improve for all sources, they improve significantly less for the lawyer than for the biologist ($p < .01$), and slightly

TABLE 2
F₃ FROM ANALYSIS OF VARIANCE FOR EXCUSES AND FOR MEASURES OF CHANGES IN SOURCE EVALUATION

Source	d ^a	Personality	Intelligence	Character	Authorita- tiveness	Prestige	Excuses
Source credibility (A)	2	.66	6.12**	4.31*	1.69	20.89***	1.04
Discrepancy (B)	2	3.68*	2.06	5.68**	1.22	1.34	31.81***
A × B	4	1.82	.99	1.01	.30	1.08	.54
Within ^b	162	80.04	62.81	152.78	4.35	2.98	69.54

^a Omitted order effects account for nine d_fs.

^b Mean squares instead of F_s.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

short of significantly less for the lawyer than for the private. Changes in character ratings of the biologist and private do not differ statistically. Discrepancy effects are associated with character and personality ratings. Changes in character ratings are due to a lesser increase in favorableness for zero hours of sleep than for six ($p < .01$), or four ($p < .05$). Changes in personality ratings are associated with a greater increase in favorableness for six hours than for four or zero ($p < .05$ in both cases).

4. *Excuses*

Individual excuse scores are the total of all responses to excuse-questions. Maximum excuses yield a score of 48 and a minimum score of zero. While there was no difference in excuse means for the sources, Tables 1 and 2 show a powerful effect associated with discrepancy. Zero discrepancy leads to more excuses than four or six hours ($p < .01$ in both cases), and four and six do not differ. The more incredible a statement appears, the higher the subjective probability that some error or misunderstanding exists. In this sense, the greater numbers of excuses for zero discrepancy probably reflect the particularly high incredibility of this position. It might also be expected that more excuses would be found for the biologist than for the other sources. Although there were slightly more excuses for the biologist than for the other sources, the difference was far from significant.

D. DISCUSSION

When the prestigious law professor took an incredible position, he was less favorably treated than an authoritative biologist or an army private. The biologist was protected by known expertise related to the issue. The private was probably invulnerable because little could be expected of him. Expectations should be high for the prestigious professor of law. As he was unprotected by expertise, he was the most vulnerable of the sources. In all three cases where significant differences occurred for changes in source evaluation, changes for the law professor were less favorable than for the other two sources. And in two of these cases, the law professor was devalued.

In order to explain credibility data in a consistent manner, it appears necessary to go beyond the broad concept of credibility to the attributes upon which the source's credibility rests. It is instructive to consider the conclusions that would be reached if only two of the three sources had been used. If changes in source evaluation are conceived broadly in terms of degree of credibility, three mutually contradictory outcomes are possible. It would be concluded from

a comparison of only the biologist and private that changes in source evaluation following an unacceptable communication are not related to the initial credibility of the sources. If only the two professors had been used, the conclusion would change: following an unacceptable communication, changes in evaluation are less favorable for the less credible source. Lastly, the opposite conclusion would have been reached if only the renowned law professor and the private had been evaluated: changes in evaluation are more favorable for the less credible source.

There was virtually no attitude change associated with the sources, and the slight differences that did occur actually favored the least credible source. Similarly, Bochner and Insko (3), using the sleep issue, found a main effect for sources yielding an F of only .58. In their research, the differences in attitude change associated with a Nobel Prize winner in physiology and a Y.M.C.A. director for zero, three, four, five, or six hours of sleep were not significant at the .05 level, and the differences for one or two hours were considered significant by virtue of one-tailed tests. Even with extreme discrepancies embedded in a message designed to persuade, the sleep issue yielded little differential attitude change associated with source credibility. Without a persuasive message—that is, when the source is given a more or less pure opportunity to do its work—there is virtually no source effect.

In view of previous research demonstrating source main effects (e.g., 1, 2, 6), two studies yielding F s of only .24 and .58 raise questions requiring further consideration. First, it is possible that source credibility is not a sufficient condition for influence. It may be necessary to accompany sources with a persuasive message or some other form of active influence in order to bring out source effects. Second, without accompanying persuasion, it may be necessary to choose a source with whom the subject personally identifies. Sherif, Sherif, and Nebergall (10) describe credibility in terms of reference-group members, and perhaps such group identity is necessary to obtain source effects without the use of persuasive arguments. Third, such attributes as prestige or authoritativeness may not be sufficiently influential with such an issue as sleep. The sleep issue allows the use of unequivocal numerical discrepancies in relation to a condition with which all subjects are thoroughly familiar. If the subject firmly believes he knows better by virtue of his own long experience, he may be little affected by even a very credible source, especially if the source is making an extreme statement. This third possibility seems the most likely in the present context. It is consistent with social judgment theory (10) in which source effects depend upon the ambiguity and magnitude of discrepant positions.

E. SUMMARY

The effect upon attitude change of incredible discrepancies between one's own position and positions advocated by different sources was investigated. A three-factor design with 10 subjects per cell had three levels of discrepancy, three sources, and two orders in which subjects could either rationalize an incredible position or re-evaluate the credibility of its source. There was more derogation of a prestigious layman than either a prestigious expert or a source lacking both prestige and expertise.

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Department of Psychology
University of California, Riverside
Riverside, California 92502

A FIELD EXPERIMENT ON THE EFFECT OF POLITICAL AND CULTURAL FACTORS ON THE USE OF PERSONAL SPACE*¹

City College of the City University of New York

STEPHEN THAYER AND LEWIS ALBAN

A. INTRODUCTION

A number of investigators have examined the relationship between the physical distance between interactants and their psychological distance. Basically, most of these studies have shown that physical proximity is related to such psychological factors as felt similarity, comfort, and acceptance (2, 7, 8, 10, 11, 13) although contradictory results have also been obtained (4, 9).

The extent to which similar attitudes produce greater physical proximity is an unsettled issue, complicated by procedural aspects of relevant experiments (14). One problem is that many studies have involved obligatory discussions between people seated opposite each other across a table or in chairs already placed by the experimenter, with no option to leave or even move around very much. One may contrast this situation with a naturalistic encounter in which a much less stringent norm of consideration would be operating. Here one need not be even civilly responsive to transient strangers. This latter point is perhaps most true in urban environments. This is not to deny the fact that systematic variations in spatial behavior do occur even in these very structured experimental situations. What is being raised is the question of extrapolating from the "lab" to the "street."

Two additional points may contribute to limiting the generalizability of spatial distance studies. The first is that, with rare exception (9), the experiments are conducted with the readily available college student. The second point is that in spite of the often-cited differences in the use of personal space by different cultures (3, 5, 6, 15), there is an apparent absence of experimental work using ethnic variables. One recent exception is the field study of proxemic behavior of young school children which found significant differences in interaction distances of middle-class white children who stood farther apart from each other than lower-class black and Puerto Rican children (1).

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¹ The authors would like to thank William Schiff for valuable discussions.

The present study was designed to examine the effects of political similarity and cultural disposition on the use of personal space. The choice of a field experiment context was intended to remove the demand characteristics of most experimental lab studies of interaction distance by the use of a naturalistic situation; and further, it sought to extend the generalizability of proxemic phenomena by the use of a noncollege sample.

It was expected that subjects approached for assistance by a politically compatible as opposed to a politically incompatible stranger would choose smaller interaction distances. It was further expected that these distances would be smallest for subjects drawn from an ethnically homogeneous, close-knit community of Mediterranean extraction (New York's Little Italy) as opposed to a more diverse, heterogeneous community of mixed extraction (New York's Greenwich Village).

B. METHOD

1. Subjects

The subjects were 44 male pedestrians approximately 25 to 55 years old who were walking alone in the direction of the male experimenter.

2. Procedure

The experiment was conducted two weeks before the hotly contested New York State senatorial elections of 1970, which included James Buckley (Conservative), Charles Goodell (Republican), and William Ottinger (Democrat).

The experimenter, a 25-year-old, well-groomed male wearing a brown tweed-like suit, and a tie, approached each subject while wearing one of two, 2- X 4-inch buttons on his breast pocket. One button showed the traditional American flag (Flag button), while the other button was an American flag-like button with a peace symbol in white superimposed on the blue area where the field of stars would normally be (Peace button). A pilot study conducted prior to the experiment indicated that these buttons were highly visible and symbolized radically different political orientations. Each of 10 respondents reported that the Flag button was pro-James Buckley and symbolized conservative, pro-Viet Nam War politics, and the Peace button was anti-Buckley and symbolized anti-Viet Nam War, liberal and radical politics.

The experimenter approached each subject head on, stopped approximately two feet in front of him and asked how to get to Chinatown (a well known area in the vicinity). As soon as the subject began to reply the experimenter

moved to within six inches of the subject (shoe to shoe). The distance the subject assumed immediately after the experimenter's movement was recorded by an observer who noted the number of inches from the subject's closest shoe to the experimenter's closest shoe, using the natural grid of the premeasured concrete sidewalk as a measurement guide.

The subjects were drawn from two strikingly different political-ethnic neighborhoods.

a. Greenwich Village Location. Twenty-two subjects were approached on West 4th Street and Sheridan Square, across the street from the office of Bella Abzug, liberal, anti-Viet Nam War, peace candidate. This locality of Greenwich Village was chosen because it is a liberal, radical antiwar area of New York City. Eleven subjects were approached with the Flag button and 11 with the Peace button.

b. Little Italy Location. Twenty-two subjects were approached on Grand and Mulberry Streets. This locality of Little Italy was chosen because it is a conservative, strongly prowar area of Buckleyite politics in New York City. Eleven subjects were approached with the Flag button and 11 with the Peace button.

C. RESULTS

Table 1 presents the means and standard deviations of the interaction distances for each condition.

TABLE 1
MEANS AND STANDARD DEVIATION OF INTERACTION DISTANCES FOR
LOCATION AND BUTTON SYMBOL

Location	Button	<i>M</i>	<i>SD</i>
Little Italy	Flag	9.64	4.27
Little Italy	Peace	14.91	4.37
Greenwich Village	Flag	15.09	6.00
Greenwich Village	Peace	13.00	3.74

An analysis of variance of the interaction distance scores showed that the main effects of Location and Button symbol were not significantly different. However interaction distance was significantly affected by the interaction between Location and Button symbol ($F = 6.82$, $p < .05$). Data were further analyzed by the Duncan Multiple Range Test. The results showed a significant difference ($p < .05$) in mean distance from the Flag- versus Peace-

button wearer in Little Italy, but no significant difference in Greenwich Village although the results were in the expected direction.

D. DISCUSSION

There are several factors that would account for the presence of differential interaction distances obtained in this field experiment in Little Italy as opposed to Greenwich Village. First of all it must be kept in mind that the political-emotional climate in New York City when the study was conducted surely heightened the salience of political symbols. It was two weeks before the New York State senatorial elections. The city was polarized into warring factions. Incidents of violent physical confrontation were occurring daily. The media continually provided extensive reports of bloody clashes. However one describes the conflicting factions, they were often characterized as "hard-hat, prowar," symbolized by the American flag, and "antiwar, peace," symbolized by some form of the peace symbol.

The fact that the Greenwich Village sample did not respond with differential spatial behavior to the different button wearers may be partially explained by the character of that community. Greenwich Village contains a more transient, heterogeneous population with a reputation for accepting great diversity among people. It is not at all unusual to see people wearing any kind of button or symbol, radical or conservative or, as a matter of fact, any style of dress. Further, the well-known tourist attractions of Greenwich Village may have drawn nonresidents to the area, which may have diminished the obtained differences. Within Little Italy on the other hand, there is a less transient, homogeneous population with less opportunity and less tolerance for neighborhood contact with unusual political or social behavior.

In essence then, the likelihood of exposure to extreme political diversity *within* these two communities was quite different as was the likelihood of acceptance of this diversity.

Additionally, there is also the possibility of ethnic differences in interaction distances. Different observers (e.g., 6, 12) have noted how people of Mediterranean extraction as opposed to Europeans and Americans use smaller interaction distances with strangers, as well as acquaintances. The results of the present study, however, suggest that this cultural characteristic is not reflected in indiscriminate proximity, but may rather be a characteristic that may be influenced by any number of stimuli signalling critical differences between interactants. If this is true then perhaps the cultural tendency toward the use of smaller interaction distances manifested by the Little Italy subjects

was released by similar or compatible others (Flag-button wearers) and inhibited by dissimilar or incompatible others (Peace-button wearers).

E. SUMMARY

Male pedestrians were approached for help with directions in a known conservative (Little Italy) or liberal (Greenwich Village) neighborhood during the bloody "hard-hat" "antiwar" clashes preceding the 1970 New York State senatorial elections. The questioner wore either a large American flag button or a Peace button. The distance the subject assumed immediately after the questioner asked for help and the subject began to reply was noted by an unobtrusive observer. Results showed significantly smaller interaction distances with the Flag button wearer in the conservative neighborhood and no significant differences in the liberal neighborhood. Results are discussed in terms of the likelihood of exposure to, and tolerance of, extreme political diversity within the two neighborhoods sampled, as well as necessary releasers for ethnically predisposed proxemic behavior.

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*Department of Psychology
City College of New York
138th Street and Convent Avenue
New York, New York 10031*

RACE AND SEX IN THE COMMUNICATION OF EMOTION*¹

Boston University

A. GEORGE GITTER, HARVEY BLACK, AND DAVID MOSTOFKY

A. INTRODUCTION

Anisfield, Bongo, and Lambert's study (1) investigated the relationship between perception of a minority group status and ascription of certain traits to such minority group members. The same actor taped two versions of a speech. In one version he used a "Jewish" accent, while in the other he did not. Those subjects who perceived him as "Jewish" rated him much lower on such variables as height, good looks, and self-confidence than did those subjects who saw him as "English." With magazine pictures of Caucasians, the results indicated that Caucasian subjects, as compared to Oriental ones, were more accurate in identifying emotions of Caucasian faces (2). A replication study by Vinacke and Fong (3) similarly indicated that Oriental subjects, as compared to Caucasian ones, were more accurate in identifying emotions expressed in photographs of Oriental faces. In both studies, the magnitude of the perceiver's sex differences was greater than that of race. The present study examines the effects of race and sex in both expressors and perceivers, in a single experimental design (1, 2, 3).

B. METHOD

This study investigated the patterns of correctly perceived emotions to the race of the perceiver and the expressor, and to the sex of the perceiver and the expressor.

A balanced $2 \times 2 \times 2 \times 2$ design tested the influence of the sex and race of both the expressor (the person portraying the emotion) and the perceiver (the person making the judgment as to the nature of the emotion).

1. Procedure

The 20 expressors in this experiment were professional actors (10 white

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and 10 Negro; five male and five female of each race. Black and white photographs were made of each expressor as he portrayed each of seven emotions: anger, happiness, surprise, fear, disgust, pain, and sadness. Each photograph showed an expressor, 3/4 figure, seated and at 45° angle to the camera. Lighting and background were constant for the 140 photographs.

2. Subjects

Forty-eight (48) undergraduate Ss (24 white and 24 Negro, 12 male and 12 female of each race) were recruited in Boston to serve as perceivers. Each S was tested individually, with a set of 35 photographs (five actors or five actresses—seven emotions for each), presented in random order. After looking at each photograph the S made the judgment from a multiple-choice list of the seven emotions. The sequence of emotions in the multiple-choice list was randomized for each S.

C. RESULTS

Two separate analyses focused on the total accuracy scores and the pattern of accurately perceived emotions.

1. Total Accuracy Scores

Results of an ANOVA indicate that the race of perceiver was significantly related to the total accuracy score of perception of emotion. Negro perceivers were more accurate than their white counterparts. The statistical significance was found only in terms of main effect ($F = 4.980$, $df = 1/40$, $p < .05$); interactions with the other variables were insignificant. The results also show that neither sex, race of expressor, nor sex of perceiver significantly influenced the overall accuracy of perception of emotion. This was true for both main and interaction effects (see Table 1).

TABLE 1
PERCEPTION OF EMOTION: MEANS OF TOTAL ACCURACY SCORES

Perceivers (Ss)	Expressors (Actors)			
	White expressors		Negro expressors	
	M	F	M	F
White				
M	18.3	20.7	21.7	18.7
F	18.0	19.7	17.0	21.0
Negro				
M	19.7	22.7	19.0	21.7
F	24.3	23.3	19.3	23.0

Note: Male expressor = 19.7; female expressor = 21.4; male perceiver = 20.4; female perceiver = 20.7.

2. *Patterns of Correctly Perceived Emotions*

Results of an ANOVA with repeated measures, utilizing number of correct scores for each of the seven emotions as repeated measures, indicated that race of perceiver significantly ($F = 4.980$, $df = 1/40$, $p < .05$) influenced the accuracy of perceiving the seven emotions; Negroes perceived them more accurately. The incidence of correction perception varied significantly ($F = 37.932$, $df = 6/240$, $p < .001$) with emotion—happiness and pain giving the highest and fear and sadness the lowest proportion of correctly perceived emotions. Sex of expressor significantly interacted ($F = 11.203$, $df = 6/240$, $p < .001$) with the pattern of correctly perceived emotions—surprise and fear were perceived more accurately when the expressors were female rather than male. None of the other variables was significant either in terms of main or interaction effects.

D. CONCLUSIONS

Race of perceiver, nature of emotion, and sex of expressor influenced perception of emotion from posed photographs. The effect of the race of perceiver was noted when its influence was examined independently, both on overall accuracy score and on the pattern of correctly perceived scores for the seven emotions; Negroes were superior both in terms of overall accuracy scores, as well as correct scores for the individual emotions.

The incidence of both correct and erroneous perception varied with emotion. In addition, both of these patterns—of correct and erroneous perception of the various emotions—varied with the sex of expressor. Compared to their male counterparts, female expressors were associated with a higher incidence of correct perception of surprise and fear, a higher incidence of erroneous perception of fear and pain, and a lower incidence of erroneous perception of anger and disgust.

E. SUMMARY

Sociological and demographic factors affecting nonverbal behaviors were examined in a $2 \times 2 \times 2 \times 2$ factorial study. The effects of race and sex of perceivers and race and sex of expressors (each photograph enacting seven emotions) were evaluated in an emotion-judgment paradigm. Race of perceiver was found to be significant, as were the patterns of correctly perceived emotions.

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Department of Psychology
Boston University
700 Commonwealth Avenue
Boston, Massachusetts 02215

REPORTED ACTIVATION AND VERBAL LEARNING AS A FUNCTION OF GROUP SIZE (SOCIAL FACILITATION) AND ANXIETY-INDUCING INSTRUCTIONS*¹

Department of Psychology, California State University, Long Beach

ROBERT E. THAYER AND LOUIS E. MOORE

A. INTRODUCTION

In a paper that deservedly attracted great interest, Zajonc (19) has drawn together the diverse literature concerning social facilitation (i.e., the behavioral effects on an individual from the mere presence of one or more other individuals). Finding contradiction in the literature, he proposed a unifying structure on the basis of a generalization and an hypothesis. The generalization was "... that the presence of others, as spectators or as coactors, enhances the emission of dominant responses." The hypothesis was, "... the presence of others increases the individual's general arousal or drive level" (19, p. 273).

Zajonc presented substantial evidence in his paper on the effects of audience (spectator) observation on the emission of dominant responses. And a considerable amount of later research (e.g., 2, 10, 20) has supported the assumed audience effects.² In a major theoretical addition, some convincing evidence was presented by Cottrell and his associates that the mediating mechanism by which audience effects occur is the anticipated reward or punishment to the person from the spectators (3).

While there is good indication of social facilitation effects arising from audience observation, the evidence for similar effects from the coercion of several individuals is not very strong. Yet many behavioral scientists have apparently accepted the assumption of coercion effects. Such acceptance from limited evidence is surprising when one considers the important implications that these findings would have. To cite just two examples important to psychologists, every psychological experiment conducted with groups of people

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² It should be noted that the experimental research presented in this paper is set within a limited cultural context. The major evidence of social-facilitation effects offered by Zajonc and by others working on the same phenomena is derived primarily from American undergraduate students employed as experimental subjects. There may well be cross-cultural variations in group influence.

and all psychological testing in group settings would have to be reevaluated to take account of the important activation differences assumed to occur when two or more individuals engage in the same task, even when the performance of each individual is private.

The primary evidence noted by Zajonc for the social facilitation effects for coacting groups was not obviously applicable to human behavior. Reference was made to several kinds of observations that infrahuman animals are facilitated in well-learned tasks (e.g., eating and nest building) when two or more species members are present as opposed to solitary performance. Some additional evidence described by Zajonc from human studies by Allport and Dashiell was somewhat equivocal because the tasks on which differential facilitatory and inhibitory effects occurred were not clearly shown to elicit dominant or competing responses. Furthermore, as noted earlier, Cottrell found that the mere presence of other nonevaluative subjects did not result in social facilitation. And Klinger (6) recently showed that a coacting group, as opposed to a potentially evaluative audience, did not produce social facilitation.

Some additional contradictory evidence was suggested by Cottrell (3) concerning the drive or general arousal-increasing effects of coacting groups in cases where the arousal was already raised by a nonsocial means. He pointed to research by Schachter (12) that certain kinds of subjects confronted with threatening circumstances prefer waiting in groups to waiting alone, and more recent research by Kiesler (5) indicating that under stressful conditions groups reduce rather than increase drive. Other evidence also exists that anxiety may be reduced through certain kinds of interpersonal interaction (8).

In proposing his hypothesis regarding social-facilitation effects, Zajonc (19) referred to increases in drive, arousal, and activation and to a literature concerning these constructs (4, 14). Most of the research following Zajonc's theoretical proposal dealt with the Hull-Spence construct of drive (e.g., 18). However, Cottrell's discussion concerning arousal by nonsocial means implied constructs such as anxiety or stress-induced arousal. The interchangeable usage of the constructs drive, arousal, activation, and anxiety is not surprising when one considers their apparent equivalent bases (9, 15). In addition to the assumed similarity of the various constructs, an assumption is often made that there is a single drive or activation continuum ranging from high drive or anxiety to low drive and sleep. The precedents for this assumption can be found in theoretical formulations by Lindsley (7), and Duffy (4) and a wide variety of writings dealing with the Hull-Spence drive construct. There is a considerable amount of controversy on the single-activation continuum theory, however, particularly from neurophysiological studies (e.g.,

11). Furthermore, research by Thayer (15, 16) suggests there may be more than one activation continuum underlying behavior.

Until now most research on social facilitation enabling inferences about underlying activation states has depended on performance on various tasks from which drive predictions could be made. Greater precision may be possible, however, with the use of the Activation-Deactivation Adjective Check List, AD ACL (15). This test provides a simple verbal-report measure of momentary feelings within the experimental setting. The AD ACL requires subjects to rate their momentary feelings of activation on a large list of activation-descriptive adjectives embedded in other general mood-descriptive adjectives. Various factor-analytic studies have yielded four orthogonal activation dimensions: General Activation (i.e., lively, active, full-of-pep, energetic, peppy, vigorous, activated), High Activation (i.e., clutched-up, jittery, stirred-up, fearful, intense), General Deactivation (i.e., at-rest, still, leisurely, quiescent, quiet, calm, placid), and Deactivation-Sleep (i.e., sleepy, tired, drowsy). Previous research demonstrated substantial correlation between AD ACL factor scores and composites of concurrently assessed psychophysiological measures, and there was evidence of the independence of the underlying activation continua (15, 16). Though information is still incomplete concerning the exact description of activation states underlying verbal reports on the four AD ACL subscales, there is some evidence that General Activation best represents middle-activation states not associated with anxiety or stress reactions. High activation, on the other hand, probably best represents high-activation states influenced by anxiety and stress-producing stimuli.

The purpose of the present investigation was to explore several of the problem areas outlined above. A factorial design was employed which included two levels of social facilitation and three levels of instructions-produced anxiety. Though the Zajonc theory predicts social-facilitation effects in spectator and coacting groups, consistent demonstration of the effects has occurred only under spectator conditions; therefore, the present study compared activation reports and anonymous performance of coacting groups (10 subjects) with the reports and performance of lone individuals. Evidence that groups may reduce anxiety, particularly under nonevaluative conditions, is also apparently contradictory to the Zajonc theory. The three levels of manipulated anxiety were included to provide clarifying information on the interaction of anxiety and group variables. Finally, with the use of the AD ACL, as well as previously used performance measures, the dimensionality of activation states underlying social facilitation was investigated.

B. METHOD

1. *Subjects and Apparatus*

The subjects were 116 male college students recruited from introductory psychology classes. Original plans called for 120 subjects (20 per cell), but apparatus failures and lack of subject appearance at the appointed time resulted in the smaller number. Activation was assessed with two AD ACLs (15).

A high-competition paired-associates list was used which included four high-association and eight low-association pairs constructed in such a way that response tendencies were higher for high-association response words than for low-association response words (13). The words were presented with a Kodak Carousel slide projector and a manual slide-change control on a viewing screen in front of a small classroom-type room. The slide presentation time was 10 seconds per stimulus word, five seconds per pair, and five seconds between trials. In the learning task, subjects recorded their responses in small stapled booklets made of plain mimeograph paper cut into 36 numbered sheets.

2. *Procedure*

The 2×3 experimental design included six separate groups of subjects. Half the subjects in every condition were run by each of two experimenters. The experimenters were psychology graduate students who introduced themselves as Mr. — and as research associates. This social facilitation variable included two conditions: alone and a group of 10. In the alone condition the subject was seated facing the screen. Following the instructions the experimenter sat well behind the subject out of his field of view and operated the slide projector. The group condition was conducted in exactly the same way except that 10 subjects were tested instead of one. Because of the nature of the booklet provided to subjects for recording responses, individual performance was private.

Anxiety was manipulated by instructions and included three conditions: low, moderate, and high anxiety. The high-anxiety instructions contained statements of the importance of the experiment, and several admonitions to do as well as possible. Also subjects were told that performance on the task correlated with intelligence. Due to possible deleterious short-term effects from the above instructions, subjects were debriefed immediately after completing the task and once again after all subjects were tested. The moderate-anxiety instructions contained the same introduction and instructions concerning the task used in the other two conditions, but no particular attempt was made

to put subjects at ease or motivate them highly. The low-anxiety instructions indicated the study was for practice only, that all names and scores would be anonymous, and that the experimenter would look at the subject's responses only to see if the instructions were clear.

Following the introductory instructions the experimenter explained that a list of paired associates would be presented four times in different orders. Starting on the second presentation, as the stimulus word appeared, subjects were to write the response word on one of the numbered sheets and fold the sheet back before the confirming pair appeared. Following these instructions, subjects were given the first AD ACL, and immediately following the learning task they were given the second AD ACL. Though the experimenter could not directly observe the responses of the subjects, it was noted that subjects cooperated by folding the sheets back and not writing after the confirming pairs appeared.

C. RESULTS

Data from the two AD ACL administrations were summed and four mean factor scores were calculated (one score for each AD ACL factor).³ The rating scale for each AD ACL adjective included the following: definitely do not feel, cannot decide, feel slightly, and definitely feel; the four alternatives were scored 1 through 4 respectively. Mean self-report factor scores for all conditions are presented in Table 1. Also Table 1 includes the mean number of correct responses (three anticipation trials) for noncompetitive and competitive words.

1. *Instructions Effects*

The anxiety instructions had two kinds of effects on verbal reports. Strong effects, ordered as expected, were found for the High Activation (H. Act.) dimension, $F(2, 110) = 6.1$, $p < .005$. That is, under high-anxiety instructions, subjects reported being clutched-up, jittery, stirred-up, fearful, and intense. Under moderate-anxiety instructions, subjects reported fewer

³ Since previous studies employing the AD ACL have utilized factor scores derived from a single administration and the present study used summed scores of two administrations, it was appropriate to recheck the factor structure of the adjectives. Therefore, a principal components factor analysis with varimax rotation was completed on the summed scores of the self-descriptive adjectives provided by the 116 subjects. The factors previously reported (15) were found once again. Because of space limitations, a more complete description of the factor analysis and rotated factor matrix may be obtained by contacting the author or by ordering NAPS Document 01912 from CCMIC National Auxiliary Publications Service, 866 Third Avenue, New York, New York, 10022; remitting \$2.00 for microfiche or \$5.00 for photocopy.

TABLE 1
MEAN AD ACL AND VERBAL PERFORMANCE SCORES AS A FUNCTION
OF ACTIVATION AND SOCIAL FACILITATION

Dependent measures	Anxiety and social facilitation					
	Low		Moderate		High	
	Alone	Group	Alone	Group	Alone	Group
General Activation	2.56	2.06	2.49	2.59	2.39	2.24
High Activation	1.78	1.71	2.02	1.98	2.45	2.01
General Deactivation ^a	2.19	2.46	2.33	2.08	2.05	2.45
Deactivation-Sleep ^a	1.79	2.46	1.56	1.39	1.91	2.16
Noncompetitive						
paired associates	7.9	6.9	7.4	8.7	8.5	8.2
Competitive						
paired associates	9.9	6.1	8.8	9.8	9.4	8.8

^a High scores indicate low activation.

H. Act. feelings; and least H. Act. feelings were reported under low-anxiety instructions (see Figure 1).

A different ordering of reported activation was observed for the other three verbal-report dimensions. In the case of General Activation (G. Act.), General Deactivation (G. Deac.), and Deactivation-Sleep (D-Sl.), the moderate-anxiety instructions resulted in greatest reports of activation, whereas high and low-anxiety instructions resulted in reports of less activation (see Figure 1). Only one of these sets of differences, that involving D-Sl., was statistically significant, however, $F(2, 110) = 6.1$ $p < .005$. Neither performance on noncompetitive nor competitive words was significantly influenced by instructions, though on both sets of words there was a tendency for anxiety instructions to produce better performance.

2. Social Facilitation and Interaction Effects

It is apparent from results on the four pairs of noncompetitive words, and more importantly, the eight pairs of competitive words (Table 1) that increased activation did not consistently produce inferior performance. In fact, if anything, there is a tendency for reports of greater activation to be associated with better performance on both sets of words. While others have made differential predictions for the two sets of words, Thayer and Cox (17) previously made the same predictions for both sets and obtained confirmatory results.

None of the AD ACL factor scores indicated that group interaction had a significant effect, though all four factor scores showed a tendency for alone subjects to be more activated than subjects in groups in the low- and high-anxiety conditions. Inspection of the order of the means of the four factors

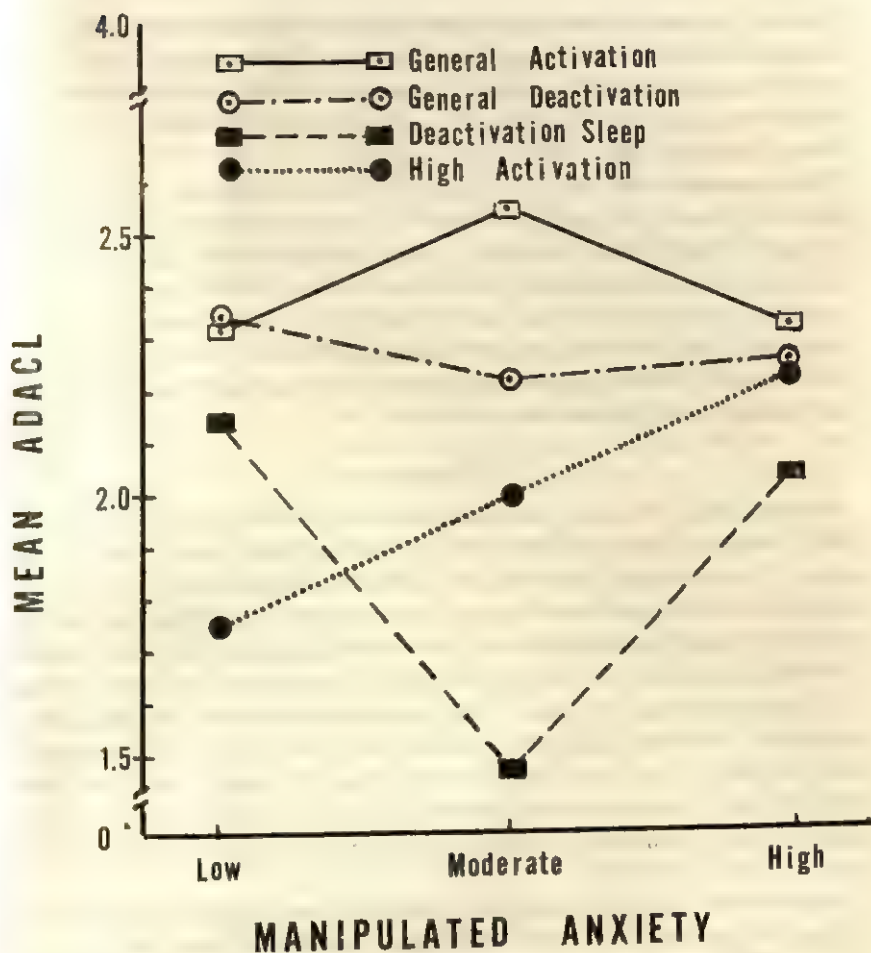


FIGURE 1
AD ACL FACTOR SCORES AS A FUNCTION OF MANIPULATED ANXIETY

showed an interaction for G. Act., G. Deac., and D-Sl., but only the interaction for G. Deac. was significant, $F(2, 110) = 3.8, p < .05$. On all three factors, subjects in groups reported more activation than alone subjects in the moderate-anxiety condition; and in the high and low-anxiety conditions, alone subjects reported more activation than those in groups. No interaction effect was found in the H. Act. reports. Alone subjects consistently reported more H. Act. than subjects in groups, though the difference between alone and group subjects is smallest in the moderate-anxiety condition.

In the high-anxiety condition, alone subjects reported significantly more activation than subjects in groups on H. Act. and G. Deac. factors ($p < .05$). In the low-anxiety condition, alone subjects reported significantly more activation than subjects in groups on G. Act. and D-SI. factors ($p < .05$). None of the other simple effects was significant.

To summarize, the verbal-report data indicated that alone subjects were significantly more activated than those in a coacting group under high and low-anxiety instructions. Conversely, the group may have increased activation in a moderate anxiety-inducing condition. The latter interaction effect was statistically significant for only one AD ACL factor, but two other factors indicated similar directional mean differences. Neither anxiety-inducing instructions nor social-facilitation conditions produced significant changes in performance on paired-associate adjectives.

D. DISCUSSION

Several previous studies using similar verbal learning variables demonstrated predicted social-facilitory and inhibitory effects under audience conditions. Therefore, the present negative verbal-learning findings together with clarifying verbal-report data obtained under coaction conditions suggest Zajonc's (19) social facilitation theory may not be applicable with both audience and coacting groups. This conclusion appears particularly true for high and low manipulated-anxiety states; in the current investigation the relevant experimental conditions resulted in reduced, rather than increased, reported activation levels. There may be some basis for assuming social facilitation effects (i.e., increased arousal) under moderate anxiety as subjects in the present middle-anxiety condition generally reported more activation in groups than alone.

The overall results are inconsistent with the somewhat equivocal evidence reported by Zajonc in support of the social-facilitation theory for coacting groups (19), but quite consistent with other experimental evidence (5, 6). The reported findings also seem plausible in light of the failure of Zajonc, or anyone else, to suggest a mediating mechanism by which coacting groups could increase activation substantially enough to interfere with competitive verbal learning. Such a mediating process, of course, has been suggested by Cottrell for spectator groups (1). While it is quite possible that an individual being observed by others could anticipate reward or punishment from the group and thus be very aroused, it is not likely any such process would be present in a coacting group performing privately. It is more likely that anxious

individuals engaging in anonymous performance under coacting conditions would find relief in a group compared to being alone.

The social-facilitation theory proposed by Zajonc had immense value if on no other bases than its reintroduction of problems that are very important to all behavioral scientists and its stimulation of a great deal of theory and research. However, the work of Cottrell and his associates and the negative findings for coacting groups suggest that the original theory may have been too broad in its conceptualization. As with most general scientific theories, further research and thinking about social facilitation will probably result in more precise conceptualizations in specific cases. One example is the above evidence that the theory holds for evaluative audiences but not for coacting groups except possibly under moderate-activation conditions. Furthermore, additional research may indicate that the mediating process by which social facilitation occurs in nonevaluative-coacting groups is quite different from the process mediating evaluative-audience groups. Once again a cautionary note should be sounded concerning the cultural limitations of the work on social facilitation. Before any universal law of social facilitation is formulated, the predicted effects must be explored in cross-cultural settings.

The effects on verbal reports from the anxiety-inducing instructions are particularly interesting in regard to the previously noted early conceptions of activation. While it has often been assumed that a single activation continuum underlies behavior, previous AD ACL research and especially the present results suggest there may be several activation continua underlying overt behavior. In the current study, some activation dimensions were at highest levels under ostensibly high external-stress conditions. Compared to low-anxiety levels, high-anxiety instructions produced reports of being clutched-up, jittery, and stirred-up; but subjects also reported being more sleepy, tired, and drowsy rather than less. However, conditions promoting high motivation without stress (moderate-anxiety instructions) resulted in lowest deactivation or highest activation as evidenced by scores on G. Act., G. Deac., and particularly D-SI. Figure 1 shows these differences quite clearly. While there is a linear change for the H. Act. dimension as a function of anxiety-inducing instructions, U-shaped functions were found for the other three AD ACL factors.

E. SUMMARY

A theory by Zajonc holds that both audience and coacting groups increase activation in individual members. Other evidence suggests that nonevaluative

coacting groups may reduce activation, particularly under high-anxiety conditions. This apparent contradiction plus other conceptual problems associated with the dimensionality of activation were investigated with a factorial design employing 116 subjects in three levels of manipulated anxiety combined with alone *versus* coacting-group conditions. Activation was studied directly through multidimensional verbal reports and indirectly through performance on a list of competitive paired associates. Paired-associates performance did not change as a function of group interaction, thus suggesting some revision of the social-facilitation theory for coacting groups. Supporting verbal-report data suggested groups may increase activation in moderate-anxiety conditions, but groups clearly reduce activation under high- and low-manipulated-anxiety conditions. Other findings provided evidence for at least a two-dimensional view of activation.

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Department of Psychology
California State University, Long Beach
Long Beach, California 90801

SELF-REFERENT ACCURACY IN SELF-ANALYTIC GROUPS*¹

Harvard University

JOSEPH H. PLECK

A. INTRODUCTION

A widely held social-psychological schema for interaction (5, 7) holds that in social encounters, an individual performs actions that are evaluated by others according to accepted norms; these evaluations are generalized to evaluations of the actor himself; the actor perceives others' evaluations, which then become part of his self-evaluation; the actor's confirmed or modified self-evaluation determines his next actions. These actions are in turn evaluated by others, and thus the cycle repeats itself. A crucial step in this schema is the individual's accurate perception of others' evaluations of him, hereafter referred to as self-referent accuracy (SRA), following Tagiuri (8).

Previous research shows that SRA on the social evaluative dimension of liking does not increase over time in small groups. In a study of over 70 groups of varying sizes and compositions, Tagiuri (8, pp. 325-326) found that levels of SRA were high, but that "... there is very little change in self-referent accuracy as the members of a group move from a situation in which they are complete strangers to a state of considerable intimacy." SRA increased slightly, however, for those whose sociometric popularity in their group rose over time.

Newcomb (6) found that high levels of SRA on liking remained fixed over time in two groups of 17 students who lived together in a cooperative college house. Like Tagiuri, he found a slight increase in SRA in those who became more popular over time. Newcomb speculated that this occurred because individuals tend to overestimate the amount of liking they receive from others. Thus, to the extent that a person actually is liked, he will be accurate, and to the extent that he becomes more liked, he will become more accurate.

Burke and Bennis (4) investigated several hypotheses about social perception on three dimensions of social evaluation labelled friendliness-evaluation, dominance-potency, and participation-activity. Subjects were members of sen-

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sitivity training groups. The average discrepancy between a member's perception of himself and the mean perception of him by others decreased over time. It cannot be inferred, however, that increased congruence between self-perception and mean perception by others is due to increased SRA. Measuring SRA requires a comparison of the ratings a person thinks he will receive from others with the ratings he actually receives. Increased congruence between self-perception and perception by others could come about through increased self-expression in the groups or through increased conformity to group norms, without increased SRA.

In summary, the research literature indicates that levels of SRA are high in small groups, but do not increase over time. Change in SRA over time has been investigated directly only for the dimension of liking. Except for Newcomb's (6) speculations, there has been little analysis of the determinants of SRA.

B. HYPOTHESES

This study replicates and refines previous research on changes in the level of SRA over time (Hypotheses I, Ia), and tests several hypotheses about the determinants of SRA (Hypotheses II-IV).

Hypothesis I: Stability over time. SRA is stable over time on salient dimension of social evaluation.

Hypothesis Ia: Participation. While SRA is stable over time, it is greater in high participators than in low participators. Those more highly involved in a group, interacting more with other members, should have more motivation for and information necessary for an accurate self-referent judgment.

A perceptual-cognitive model of self-referent judgments suggests the following three factors as determinants of SRA.

Hypothesis II: Heterogeneity of evaluations received. The first determinant of SRA, like accuracy in any perceptual task, is the complexity of the stimulus to be perceived. Others' evaluations of a person can be relatively homogeneous or heterogeneous. SRA is easier to achieve when ratings received are homogeneous. If the individual must assess the average evaluation made of him, it is easier to perceive a single evaluation held by many others than the average of many different evaluations, each held by a single other. If others are in high agreement about a person, it is likely that each particular other holds his evaluation relatively firmly because it is consensually validated and gives evidence of it in interaction. Further, an individual may tend to base his estimate of the average rating he receives from others on a few highly salient particular others. Sampling a few salient others can lead to error only when vari-

ance in ratings received is high. Overall, SRA should be negatively related to measures of the heterogeneity of evaluations received.

Hypothesis III: Interaction received. SRA should depend on the amount of information the person has about how others in his group regard him. This information comes primarily from others' interaction with the person. Amount of interaction received should be a good index of amount in information received and should be positively related to SRA.

Hypothesis IV: Typicality of inference processes. Individuals vary on the extent to which they perceive things the way most others do. A person with atypical, eccentric social inference processes will have difficulty correctly interpreting others' behavior toward him and will misperceive how they regard him. A measure of the typicality of the person's judgments of others, the extent to which his perception of others is like that of most other people, should be positively related to SRA.

C. METHOD

Subjects were members of two sections of an undergraduate laboratory course in group dynamics. Each section constitutes a self-analytic training group, meeting for an hour three times a week for two academic terms, with male and female coinstructors. The course format is given fully in Bales (3, Appendix 6). The present study examines the first half of the groups' history, covering the first 27 one-hour meetings.

The ratings described below were made with the Interpersonal Ratings, Form A (3). The instrument generates pairs of scores for each of three dimensions of social evaluation: activity (social power and dominance), likeability, and taskability (facilitation of group task performance). These three dimensions have occurred persistently in factor-analytic studies of social perception (2). The two scores for each dimension represent its two opposite poles and were combined as $A/(A + B)$ to yield a single score for each dimension. Ratings on taskability were not used, since pilot data indicated that ratings on this dimension were strongly associated with ratings on activity in this sample. Activity and likeability ratings were independent.

Group members were asked to "rate yourself as you think others in your group would, on average, rate you" after the 12th (Time 1) and 27th (Time 2) sessions. At Time 2 members were also asked to rate each other member of their group. The ratings each member received from others were averaged. At both times four persons who regularly observed each group through a one-day screen rated each member. The self-ratings and mean group and observer

ratings of each member were standardized within each group, so that data from the two groups could be analyzed together.

In testing Hypothesis I, SRA was measured by computing the product-moment correlation between the self-ratings and mean observer ratings received on activity and likeability. Mean observer ratings were used as estimates of mean ratings received from other group members. Direct comparison of average ratings received from observers and group members at Time 2 showed a high level of agreement between these two measures ($r = .78, .76$, for activity and likeability, $N = 54$, $p < .01$, two-tailed). Other analyses showed that results for hypothesis I (below) based on observer ratings as criteria were almost identical with results based on group members' ratings, with only slight differences in correlation coefficients. This equivalence of observer and group ratings as criteria for self-referent judgments bodes well for future research, since it sometimes requires unusual persistence to collect social perception ratings from each group member about each member in a group, when the number of members is more than a few and the rating instrument is complex and sophisticated.

Ss were classified as high or low participators, for testing hypothesis Ia, by scoring eight randomly chosen sessions with the use of the Interaction Process Analysis (1). Ss were dichotomized at the median for their group in total interaction initiated.

Hypotheses II-IV were tested with data from Time 2. Individual SRA scores were computed as the absolute difference between the individual's self-rating and the mean rating received from group members, standardized within each group. Each S's self-rating was previously standardized within the set of ratings he gave others. Thus, the self-rating represents the individual's estimate of how others will rate him relative to others in the group, just as the criterion ratings represent his actual relative position in the group. The absolute difference scores between these two measures on activity and likeability were given negative sign, so that high score means accuracy.

Heterogeneity of ratings received was computed as the standard deviation of the set of ratings each S received from others, in raw score form. Amount of interaction received was measured through Interaction Process Analysis scoring. The number of acts each S received over the eight sessions scored was summed and converted to a percentage measuring what portion of the interaction in his group was directed to him individually. Typicality of social inference processes was measured as the correlation coefficient between the set of ratings S gave others in his group and the average rating received by each

other. The correlation coefficient for each S was squared to make the distribution of scores more normal.

D. RESULTS

Table 1 shows data testing Hypotheses I and Ia. For the whole sample, there is a slight but nonsignificant increase in SRA on activity and likeability, consistent with previous research and Hypothesis I. Analysis of high and low participators separately reveals a more complicated pattern underlying this overall stability in SRA, contrary to Hypothesis Ia.

TABLE 1
CORRELATIONS BETWEEN SELF-RATINGS AND POOLED OBSERVER
RATINGS FOR TIME 1 AND TIME 2

Dimension	All S s	Sample	
		High participators	Low participators
		Time 1	
Activity	.67**	.61**	.67**
Likeability	.36*	.56**	.13
N	48 ^a	27	21
		Time 2	
Activity	.68**	.77**	.28
Likeability	.48**	.16	.81**
N	46 ^a	25	21

* $p < .05$, two-tailed.

** $p < .01$, two-tailed.

^a Six members did not turn in ratings at Time 1; eight members did not turn in ratings at Time 2.

High participators are high on SRA for activity at Time 1 and show a nonsignificant trend toward higher accuracy on this dimension over time. High participators are accurate on likeability at Time 1, but become nearly significantly less accurate over time (difference between correlations significant at $p < .12$, two-tailed). Low participators are initially high in SRA on activity and low in SRA on likeability, but over time this pattern is reversed (change significant at $p < .15$ on activity, $p < .01$ on likeability).

Table 2 provides data testing Hypotheses II-IV. In view of the findings on Hypothesis Ia, data are shown for the entire sample and for high and low participator subgroups.

The predicted negative association between SRA and heterogeneity of ratings received is significant in one of six possible cases. It should be noted

TABLE 2
CORRELATIONS BETWEEN SRA SCORES AND
THREE PREDICTOR VARIABLES

Dimension	Sample		
	All Ss (N = 46)	High participators (N = 25)	Low participators (N = 21)
<i>Heterogeneity of ratings received</i>			
Activity	-.08	-.42*	.01
Likeability	-.23	-.06	-.29
<i>Amount of interaction received</i>			
Activity	.22	.10	-.11
Likeability	-.08	-.02	.37*
<i>Typicality of social inference</i>			
Activity	.36**	.24	.48*
Likeability	.36**	.46**	.22

* $p < .05$, one-tailed.

** $p < .01$, one-tailed.

in the high and low participator subgroups that the correlations are most negative ($-.42$, $-.29$) on which each group is relatively accurate at this time: activity for high participators and likeability for low participators.

The predicted positive association between SRA and amount of interaction received is confirmed in only one of six cases. The prediction comes closest to confirmation for each subgroup's relatively accurate dimension.

The predicted positive association between SRA and typicality of social inference is observed in four of the six cases. In the participation subgroups, the prediction is confirmed for each subgroup's relatively inaccurate dimension.

E. DISCUSSION

The data above demonstrate an unanticipated and complex pattern of change in SRA over time (Hypotheses I, Ia) and selective confirmation of three predictions (Hypotheses II-IV) derived from a perceptual cognitive model of the determinants of SRA.

We note a pattern in which high and low participators each have a dimension of social evaluation on which SRA becomes increasingly and significantly high over time. On this dimension (activity for high participators, likeability for low participators) SRA is associated with receiving homogeneous ratings from others and a high rate of received interaction, both aspects of the social cues S receives. SRA on this relatively accurate dimension also has a modest but nonsignificant positive association with a measure of the extent to which

the individual's perceptions of others agree with those of the group as a whole, a characteristic of the individual. Both these cue and individual factors have relatively low predictive power, however.

High and low participators also have a dimension of social evaluation (likeability for high participators, activity for low participators) on which SRA becomes markedly lower over time. Individual differences in accuracy on this dimension seem to relate only to the measure of typicality of social inference, the individual measure, at relatively high and significant levels. Variations in cue factors (homogeneity and amount) appear to have no predictive effect.

The individual typicality of inference measure is the single best predictor of SRA, across both groups and both dimensions of social evaluation. Variations in homogeneity and amount of social cues affect SRA on only one of two dimensions for each subgroup. It might be speculated that high participators attend more to social cues showing how dominant others think they are, while low participators attend more to cues showing how others like them, consistent with the relatively higher SRA on activity for high participators and higher SRA on likeability for low participators. Then the differential effect of social cue variables on SRA can be accounted for by reasoning that variations in homogeneity and amount of social cues on a dimension of social evaluation can have an effect on SRA only if one is sensitive to and attending to cues on that dimension. Thus, cue factors are associated with SRA on activity for high participators and likeability for low participators. Further research is directed toward testing this interpretation.

F. SUMMARY

Two aspects of self-referent accuracy (SRA), a person's ability to judge accurately how others regard him, are investigated in this study of self-analytic small groups in a college setting. First, the average levels of SRA are high and stable over time on the dimensions of activity and likeability. However, further analysis indicates that high participators show decreasing SRA on likeability and high, stable SRA on activity, while low participators show decreasing SRA on activity and increasing SRA on likeability. Second, predicted relationships between SRA and heterogeneity of ratings received, amount of interaction received, and typicality of social inference processes are selectively confirmed. It is suggested that the typicality of social inference measure is the best overall predictor of SRA, in both subgroups and on both dimensions. Variations in the heterogeneity and amount of social cues affect

SRA only on the relatively accurate dimension of each subgroup because high participators are more oriented to social cues on activity, while low participators are more oriented to social cues on likeability.

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Department of Social Relations
Harvard University
Cambridge, Massachusetts 02138

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from CCMIC National Auxiliary Publications Service.

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LOCUS OF CONTROL AND CREATIVITY IN BLACK AND WHITE CHILDREN*

Temple University and Eastern Pennsylvania Psychiatric Institute

JOSEPH DUCETTE, STEPHEN WOLK, AND SARAH FRIEDMAN

In previous research the present authors have found that the variable of locus of control relates to information seeking strategies.¹ Specifically, an internal *S* (i.e., an *S* who perceives a relationship between his behavior and his reinforcements) is a more active and efficient utilizer of information than his external counterpart. From such conceptualizations it might follow that the internal *S* will also be more creative. In addition, several studies have discovered a relationship between race and locus of control (with minority groups generally being more external). In the present paper these two areas of research were brought together by investigating the relationship of locus of control and creativity in a population of black and white, school-aged males.

The *Ss* consisted of 40, lower-class males between the ages of nine and 11, equally divided between blacks and whites. All *Ss* were individually administered Crandall's Intellectual Achievement Responsibility Questionnaire,² and the Pattern Meanings Test developed by Wallach and Kogan.³ This measure of creativity requires the child to respond to ambiguous stimuli by indicating everything the child can imagine these stimuli to be. For our purposes, this test produced three scores: fluency, the total number of responses emitted:

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¹ Ducette, J. P., & Wolk, S. Locus of control and extreme behavior. *J. Consult. & Clin. Psychol.*, in press.

² Crandall, V. C., Katkovsky, W., & Crandall, V. J. Children's beliefs in their control of reinforcement in intellectual-academic achievement situations. *Child Devel.*, 1965, 36, 91-109.

³ Wallach, M., & Kogan, N. A. *Modes of Thinking in Young Children*. New York: Holt, Rinehart & Winston, 1966.

creativity, the uniqueness of these responses; and, creative efficiency, a ratio produced by dividing fluency by creativity.

The locus of control scores for the entire sample were ranked, and a median split was performed. This resulted in the following four groups: white internals, $n = 11$; black internals, $n = 8$; white externals, $n = 9$; black externals, $n = 12$. Three two-way analyses of variance (Race by Locus of Control) were performed. For the dependent variable of fluency, neither main effects nor the interaction were significant. An analysis of the creativity and creative efficiency scores, however, indicated in both cases a significant effect for Locus of Control ($p < .01$). As predicted, internals gave more creative responses than externals and were more efficient. Neither Race nor the interactions were significant for either of these dependent variables.

The present study would seem to contribute to the development of locus of control theory, as well as suggest the circumstances under which social factors can moderate the predictions made by this theory. In demonstrating greater creativity and a heightened ability to manifest such creativity concisely, the internal S seems to be a more active seeker and user of information than his external counterpart. The data presented here (especially in view of the attempt to hold socioeconomic status constant across racial levels and to use socially neutral stimuli in the test of creativity) would also seem to argue for an invariant relationship between locus of control and creativity across social milieus. While the present study cannot determine the direction of causality, nor relate racial differences to other than the one dependent variable studied, it would seem theoretically important in future research more fully to investigate the relationship between expectancy for control and information utilization strategies in various environments with a wider range of dependent variables.

Stephen Wolk

Department of Educational Psychology

Temple University

Philadelphia, Pennsylvania 19122

THE N AND THE OUT: ADDITIONAL INFORMATION ON PARTICIPANTS IN PSYCHOLOGICAL EXPERIMENTS*

University of Maryland—European Division

JACK A. NOTTINGHAM

Degrees, publications, and reputations often hang by the same slim thread—subjects' willingness to take part in psychological experiments. Considerable data have accumulated on the incentives for research involvement—a desire to assist another person, a need for cash, an opportunity to serve science, and curiosity. Concern for understanding refusals has been somewhat neglected; Jackson and Pollard¹ reported the main reason given by 80 percent of subjects who refused was that they had no time available. Research has also focused on the personal characteristics of volunteers for behavioral research. These studies are reviewed by Rosenthal and Rosnow.²

The present study came into being serendipitously as a result of a major study exploring the relationship between moderate and extreme attitudes and information-seeking behavior. Its purpose was to explore social attitudes possessed by volunteers and incentives behind their participation.

The original study necessitated three groups of subjects differing in the extent to which they believed other people were trustworthy (i.e., honest, moral, and responsible). The Trustworthiness dimension of the Philosophies of Human Nature Scale (PHN) was used for this purpose. Subject pools of low, moderate, and high beliefs about Trustworthiness were compiled from an undergraduate female population. Only 80 subjects of an original group of 400 met the criterion established for neutrality or extremity of attitude. For the original study 18 subjects in each group were required. Potential subjects were telephoned and asked to volunteer for a "study of college student attitudes." All 36 subjects in the high and moderate groups agreed to participate when contacted in this manner. However, in the low Trustworthiness group four potential subjects refused. On the basis of this unexpected turn of events, it was decided, after completion of the information-seeking study, to mail all

* Received in the Editorial Office, Provincetown, Massachusetts, on September 28, 1971. Copyright, 1972, by The Journal Press.

¹ Jackson, C. W., & Pollard, J. C. Some nondeprivation variables which influence the "effects" of experimental sensory deprivation. *J. Abn. Psychol.*, 1966, 71, 383-388.

² Rosenthal, R., & Rosnow, R. L. The volunteer subject. In R. Rosenthal & R. L. Rosnow (Eds.), *Artifact in Behavioral Research*. New York: Academic Press, 1969. Pp. 59-118.

subjects (participants $N = 54$, nonparticipants $N = 4$) a questionnaire related to participation and nonparticipation in the original study—the prediction being that a greater number of the low Trustworthiness group would again refuse to participate.

In both phases of the present experiment, results when analyzed by chi-square tests, produced statistically significant values ($p < .05$) indicating a greater lack of research participation by low Trustworthiness subjects. Of the four subjects who had refused in the original “physically present” study, three returned the mailed questionnaire and reported lack of time as the major reason they had not originally participated. These results suggest that people believing that others are not honest, trustworthy, and responsible may refuse requests for research involvement. As regards incentives for research participation, money seems to be an important factor. The majority (45 percent) took part primarily for this reason, and 72 percent stated money was the *best* way of enlisting research cooperation. The altruistic motive was also important (34 percent *prime* reason, 24 percent *best* way) in determining participation; however, the helping behavior was personally focused rather than aimed at aiding “science.” Minimal importance was attributed to appealing to subjects’ curiosity to enlist participation.

One might conclude, on the basis of the *present* study that subjects in an experiment are likely to possess positive beliefs about the trustworthiness of other people, to come to the experiment to earn money and assist the individual doing the study, and vary as to their willingness to take part in both questionnaire and “physically present” phases of the investigation.

Department of Psychology
Georgia Southwestern College
Americus, Georgia 31706

FEELINGS TOWARD A FRUSTRATING AGENT AS AFFECTED BY REPLIES TO CORRECTION*

Department of Psychology, University of Missouri—Kansas City

MORTON GOLDMAN, JOHN G. KRETSCHMANN, AND NELLE WESTERGARD

Researchers have been investigating the problem of whether attacking a frustrating agent would have a cathartic effect and reduce the residual hostile feelings felt toward him.¹ The current study moved to the next phase. If an individual responded aggressively toward a frustrating agent, his feelings about the frustrating agent would be affected by the way in which the frustrating agent replied to this instigation. The present study varied the replies of a frustrating figure when some aggressive, corrective action was taken to alter the frustration, and then measured the feeling toward the frustrating agent for each of these replies.

A procedure previously developed by Goldman, Keck, and O'Leary² was used. The "teacher" following a prepared script taught Ss to make paper objects and aroused S hostility by giving poor instructions and making preplanned slips. When the class was asked if anyone wanted to make a statement to the "teacher," a planted student responded with a standard complaining, corrective request. The "teacher" then responded to the complaint in one of four ways, with different Ss hearing each reply: (a) a *complying* reply—"I'm glad to know what I'm doing wrong and I'll certainly try to improve"; (b) a *neutral* reply—"I'll take that into consideration"; (c) an *excusing* reply—"I wasn't notified of this until the last minute and I'm new at teaching so I'm a little nervous"; and (d) a *rejecting* reply—"The instructions are good and if you paid attention you wouldn't have any trouble—don't blame me." College students served as Ss for the study with approximately 29 used in each of the four treatments.

Ss completed five-point rating scales dealing with how pleased the Ss were with the "teacher's" instructions, whether they would want him as a regular teacher, whether they wanted to reward or punish the "teacher," and the like,

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¹ Mallick, S. K., & McCandless, B. R. A study of catharsis of aggression. *J. Personal. & Soc. Psychol.*, 1966, 4, 591-596.

² Goldman, M., Keck, J. W., & O'Leary, C. J. Hostility reduction and performance. *Psychol. Rep.*, 1969, 25, 503-512.

and ending with the Ss assigning the "teacher" a letter grade for each treatment.

An *F* test was used to compare differences among the means of the four treatments for each of the evaluation ratings, the results for the different scales being significant between the .01 and .05 level. The rank order on all evaluations across treatments from highest to lowest was *compliance, neutral, excusing, and rejection*.

The quantitative results of this study and the consistent rankings for all measures gave strong support that replies made by a frustrating agent to corrective attempts affected the residual hostile feelings felt toward him. Initiating a request for change to a frustrating agent and being successful appeared to reduce hostile feeling, while being unsuccessful appeared to increase the hostile feeling.

University of Missouri—Kansas City
Department of Psychology
Kansas City, Missouri 64110

EYE CONTACT AND THE HUMAN MOVEMENT INKBLOT RESPONSE*

*University of Waterloo and Lakeshore Psychiatric Hospital,
Ontario, Canada*

HERBERT M. LEFCOURT, MELANIE S. TELEGI, DONNA WILLOWS,
AND BARBARA BUCKSPAN

Previous research has indicated that human movement responses (M) may be interpreted as an index of social approach during the administration of an inkblot test.¹ Therefore, it was hypothesized that there should be a positive relationship between M and social approach behaviors. Among a sample of 40 male psychiatric patients, categorized as having "good" or "poor" premorbid adjustment by Phillip's measure of the same, eye contact and smiling during testing and interviews were related to M scores derived from a selected set of Holtzman's inkblot cards.

M and premorbidty interacted ($F = 4.16, p < .05, 1/36$) in predicting eye contact frequency. Among "poors," high M Ss looked less often than all other groups. Among "goods," high M was associated with more frequent eye contact. With regard to eye contact duration, M produced a main effect ($F = 6.98, p < .01, 1/36$) as did premorbidty ($F = 4.24, p < .05, 1/36$). Lengthier looking was associated with low M and good premorbidty. In addition an interaction ($F = 2.68, p < .05, 4/144$) indicated that "poor" high M Ss engaged in the least eye contact, especially during interviews.

Smiling frequency produced a similar pattern of results. A borderline interaction ($F = 3.06, p < .10, 1/36$) was obtained with M and premorbidty. Among "goods," high M Ss smiled more often than low M Ss, while among "poors" the reverse obtained. With the psychiatric sample, then, high M was associated with social approach among "goods," but with social withdrawal among "poors."

The second investigation was conducted with 80 first-year undergraduates who were assessed with Barron's Human Movement Threshold Test. Eye contact was measured during a two-part interview. The first part consisted of open-ended questions; the second, specific questions requiring "yes" or "no"

* Received in the Editorial Office, Provincetown, Massachusetts, on October 26, 1971. Copyright, 1972, by The Journal Press.

¹ Lefcourt, H. M., & Steffy, R. A. Sex linked censure expectancies in process and reactive schizophrenics. *J. Personal.*, 1966, 34, 366-380.

answers. With regard to eye contact frequency, M produced a near significant main effect ($F = 3.44$, $p < .06$, 1/76) and an interaction between M and the segment of the interaction ($F = 5.89$, $p < .02$, 1/76). High M was associated with more frequent eye contact during the open-ended inquiry. Eye contact duration produced a similar pattern though of a lesser magnitude than frequency and was consequently of no statistical significance. On the other hand, the length of time in interaction produced significant results. High M Ss interacted longer than low M Ss ($F = 6.39$, $p < .01$, 1/76), especially high M males, during the open-ended inquiry in particular ($F = 4.02$, $p < .05$, 1/76).

Since time would have to affect the eye contact results, an analysis of covariance was conducted which reduced eye contact frequency differences to insignificance when time was controlled. Consequently, eye contact results in the latter study could be regarded as artifactual. Nevertheless, it is possible to state that high M Ss engaged in interaction more than low M Ss and that increased eye contact was one element of that social interaction.

Overall, the results from both studies offer some support for the hypothesized relationship between M and social approach behaviors, though interactions with premorbidty, and complications deriving from the correlation between interview time and eye contact frequency argue against inferring a simple and direct relationship.

*Department of Psychology
University of Waterloo
Waterloo, Ontario, Canada*

TERRITORIAL MARKERS: ADDITIONAL FINDINGS*

University of Victoria, Canada

RONALD A. HOPPE, MICHAEL S. GREENE, AND JACK W. KENNY

Both personal markers—e.g., jackets and notebooks—and impersonal markers—e.g., library books—can protect a person's temporary territory, such as a library study space or a lunch table.¹ However, it has been found that unsolicited neighbors tend not to protect a marked territory. In the first study, we examined the influence of a marker in eliciting a defense of a space by a neighbor when this protection was specifically requested—something which had not been examined earlier.

A confederate occupied a seat near a student in a university library and after a brief period asked the student to save his place. In one condition the confederate left behind a personal marker (three personal paperbacks), or in the other condition he left nothing. After a three-minute interval a second confederate attempted to occupy the space. There were 56 subjects, one-half in each condition.

A large proportion of students complied with the first confederate's request, 71% (significantly different from 50%, $z = 3.07$, $p < .003$), and told the intruding confederate that the space was occupied. The proportion was unexpectedly identical in both conditions, but it was found that slightly more than one-half, 57%, of the subjects in the no-marker condition placed their own personal markers—e.g., notebook—in the space they had been asked to save. While upsetting the experimental manipulation, it does clearly illustrate the anticipated effectiveness of a personal marker in reserving a space.

In a second study we attempted to extend Sommer and his associates' findings²—that personal markers are more effective than impersonal markers—from lunch counters to beer pubs. Four different pubs were used. Two adjacent tables were selected for each trial. At random, a personal marker (sports jacket) was placed at one table and an impersonal marker (a half-empty glass of draft beer) at the other.

Unexpectedly, in each of 30 trials except one, the table with the personal

* Received in the Editorial Office, Provincetown, Massachusetts, on October 29, 1971. Copyright, 1972, by The Journal Press.

¹ Sommer, R. *Personal Space: The Behavioral Basis of Design*. Englewood Cliffs, N. J.: Prentice-Hall, 1969.

² Sommer, R., & Becker, F. D. Territorial defense and the good neighbor. *J. Personal. & Soc. Psychol.*, 1969, 11, 85-92.

marker was occupied before the table with the impersonal marker. Ninety pub patrons were *asked* which they would choose between the jacket and beer tables and 12 waiters were asked which they believed would be chosen. All the patrons and all but one of the waiters picked the table with the beer. A marked contrast to the actual behavior of patrons.

To us the most reasonable of several possible explanations suggests that there is a subtle communication occurring between the waiters and patrons. Normally, waiters do not leave a half-empty beer at an empty table for long if the purchaser has left the premises. (We, of course had the beer remain because we had the waiter's cooperation.) Therefore, the beer could indicate that the purchaser is likely to be somewhere else in the pub and likely to return. The jacket, by itself, could have been forgotten.

Department of Psychology
University of Victoria
Victoria, British Columbia, Canada

THE VALIDATION OF ATTRACTIVENESS JUDGMENTS AS AN INDIRECT INDEX OF SOCIAL ATTITUDE*

The University of North Carolina at Asheville

JACK M. HICKS

Although numerous attempts at the construction of indirect indices of attitude have been reported (e.g., Campbell,¹ Strauss,² Katz³) adequate validation of such instruments has been lacking. One important inadequacy has been the absence of convergent and discriminant validation—the requirement, set forth by Campbell and Fiske,⁴ that a given measure should correlate higher with a relevant criterion than would a logically different measure. The purpose of the present study was to validate attractiveness judgments as an indirect index of attitudes toward Negroes by employing the convergent-discriminant procedure. Specifically, the validation procedure was to (a) correlate Attractiveness Judgments of Negroes with Attitudes Toward Negroes (convergent validation), (b) correlate Attractiveness Judgments of Whites with Attitudes Toward Negroes (discriminant validation), and (c) make a statistical comparison of the two kinds of coefficients.

The Ss were 92 white (36 male, 56 female) introductory psychology students at a midwestern state university. All Ss participated to satisfy a course requirement. Materials were (a) 60 male (55 white, five Negro) and 60 female (42 white, 18 Negro) front-view facial photographs, and (b) a 45-item Likert measure of attitudes toward Negroes, previously used by Hicks.⁵ Photographs were selected from college annuals to represent a range in attractiveness. They were mounted on 35 mm slides, and projected by a Honeywell Rondelle with automatic focusing device and timer.

Photograph judgments and attitudes toward Negroes were obtained within

* Received in the Editorial Office, Provincetown, Massachusetts, on December 9, 1971. Copyright, 1972, by The Journal Press.

¹ Campbell, D. T. Indirect assessment of social attitudes. *Psychol. Bull.*, 1950, 47, 15-38.

² Strauss, M. A. Direct, indirect, and disguised measurement in rural sociology. Tech. Bull. 26, Washington Agricultural Experiment Stations, Institute of Agricultural Sciences, State College of Washington, August, 1957.

³ Katz, I. Experimental studies of Negro-white relationships. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology*. New York: Academic Press, 1970.

⁴ Campbell, D. T., & Fiske, D. W. Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychol. Bull.*, 1959, 56, 81-105.

⁵ Hicks, J. M. Comparative validation of attitude measures by the multitrait-multimethod matrix. *Educ. Psychol. Meas.* 1967, 27, 985-995.

different experimental contexts, conducted by different *E*s. The judgments task was performed in a semi-darkened room in small same-sex aggregates, with *S*s first rating the opposite sex, and then the same sex. Photographs were projected onto a 48×48 screen for seven seconds each, with seven-second intervals. The Negro attitude questionnaire was also administered in small aggregates. Names of *S*s were obtained in both conditions.

Attractiveness judgments were subdivided into four types; Negro-male, Negro-female, white-male, white-female. An arithmetic mean of each grouping was computed for each *S*. Since male and female *S*s were treated separately, eight sets of mean judgments resulted. Each of these sets was Pearson correlated with Attitudes-Toward-Negroes scores.

Two of the four convergent correlations were significant; both pertaining to Negro male judgments. The correlations were .54 for male *S*s ($p < .05$, $df = 25$), and .41 for female *S*s ($p < .01$, $df = 55$). None of the four discriminant correlations was significant. One-tailed tests of the differences between correlated correlations showed convergent correlations to be significantly higher than discriminant correlations ($p < .005$ for male *S*s; $p < .01$ for female *S*s) for male photos only.

The results of this investigation suggested that, for white introductory psychology students, attractiveness judgments of "Negro males" may be used as an indirect index of attitudes toward "Negroes." The only significant correlations involved Negro males. Both of these were reliably higher than corresponding discriminant correlations. There were no significant correlations or correlational differences for Negro females. This discrepancy indicated that perhaps attitudes toward Negroes, as traditionally measured, was more closely associated with Negro males than with Negro females.

Department of Psychology
University of North Carolina at Asheville
Asheville, North Carolina 28801

PRIOR INFORMATION AND ATTITUDE CHANGE: A REPLICATION FAILURE*

University of Tulsa and University of Nevada, Reno

JOHN C. TOUHEY AND TRACY L. VEACH

Lewan and Stotland¹ found that the introduction of neutral information prior to an unfavorable emotional appeal tended to reduce attitude change against a little-known country. One interpretation of this finding suggests that prior information establishes and stabilizes the original attitude, rendering it more resistant to change. However, a second interpretation, also proposed by Lewan and Stotland, raises the possibility that neutral prior information may lead subjects to react more favorably toward little-known attitude objects. If subjects identify with the attitude object, however, the resistance to attitude change conferred by prior information might be limited to unfavorable emotional appeals. Since the two interpretations entail opposing predictions concerning the relationship between prior information and attitude change for positive appeals, the present study replicated and extended Lewan and Stotland's procedures to include the introduction of favorable emotional appeals.

Subjects were 80 undergraduates randomly assigned to one of four treatment combinations. All subjects were told that the study was concerned with the attitudes of college students towards foreign nations. Two groups receiving the Prior Information treatment were presented with information describing the country of Andorra in a nonevaluative context. Two groups comprising the No Prior Information treatment received similar information describing an unrelated country. Following the information manipulation, one Prior Information and one No Prior Information group heard a negative emotional appeal designed to present an unfavorable opinion of Andorra, and the two remaining groups heard a positive emotional appeal.

A 2×2 analysis of variance (Information *vs.* No Information \times Positive Appeal *vs.* Negative Appeal) on the net attitude change scores showed a large main effect for type of appeal ($F = 95.17$, $df = 1/76$, $p < .001$), a significant main effect for information ($F = 4.84$, $df = 1/76$, $p < .05$), and no interaction. Examination of cells showed that the presence of prior information

* Received in the Editorial Office, Provincetown, Massachusetts, on January 10, 1972. Copyright, 1972, by The Journal Press.

¹ Lewan, P. C., & Stotland, E. The effects of prior information on susceptibility to an emotional appeal. *J. Abn. & Soc. Psychol.*, 1961, 62, 450-453.

decreased the effectiveness of positive appeals but increased the effectiveness of negative appeals.

The findings suggest that the hypothesis of stabilization rather than identification may be the more appropriate interpretation of attitude changes induced by positive emotional appeals. However, the findings for negative appeals failed to replicate Lewan and Stotland's findings. One principal difference between the two studies suggests that communicator credibility² may be implicated in the replication failure, and that further studies on emotional appeals might examine the credibility of the communicator, as well as the credibility of the communication.

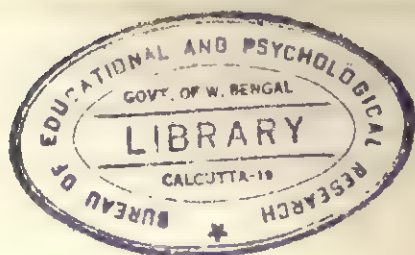
Department of Psychology
University of Tulsa
Tulsa, Oklahoma 74104

² Aronson, E., Turner, J. A., & Carlsmith, J. M. Communicator credibility and communication discrepancy as determinants of opinion change. *J. Abn. & Soc. Psychol.*, 1963, **67**, 31-36.

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AUTHOR INDEX

Alban, Lewis	267	Marx, Melvin H.	37
Bale, Richard L.	197	Moore, Louis E.	277
Baranowski, Thomas	131	Mostofsky, David	213, 273
Barclay, Andrew M.	207	Mueller, John H.	37
Bennett, Mick	145	Munroe, Robert L.	15
Bergan, John R.	185	Munroe, Ruth H.	15
Bishop, George F.	207	Noreen, Cynthia	153
Black, Harvey	273	Nottingham, Jack A.	299
Brown, Robert C., Jr.	223	Ogletree, Earl J.	147
Bruvold, William H.	241	Olen, Dale	131
Buckspan, Barbara	303	Page, Monte M.	203
Bull, Andrew J.	151	Pierce, Stephen	131
Burbage, Susan E.	151	Pleck, Joseph H.	289
Crandall, James E.	151	Pollis, Carol A.	83
Dawson, John L. M.	163	Pollis, Nicholas P.	83
DuCette, Joseph	297	Rader, James A.	83
Endler, Norman S.	21	Ravneberg, Ronald L.	151
Feldman, Kenneth A.	247	Rhine, Ramon J.	255
Fletcher, Charles I.	151	Rockett, Steven L.	151
Fodor, Eugene M.	155	Rodda, William C.	107
Friedman, Sarah	297	Rokeach, Milton	207
Gentry, William D.	75	Rosenthal, Robert	91
Gitter, A. George	213, 273	Rota, Leslie	153
Goldman, Morton	301	Ryckman, Richard M.	107
Goodman, Norman	247	Satow, Yoichi	139
Granberg, Donald	157	Schlenker, Barry R.	223
Greene, Michael S.	305	Shepherd, J. W.	233
Guichard, Michael	115	Sherman, Martin F.	107
Harris, Mary B.	65	Sigall, Harold	149
Henderson, Ronald W.	185	Silverthorne, Colin	153
Hicks, Jack M.	307	Sinha, Jai B. P.	177
Higbee, Kenneth L.	55	Soucar, Emil	31
Hoppe, Ronald A.	305	Strassberg, Donald S.	123
Hunt, Tani	153	Summers, David A.	131
Hurt, Maure, Jr.	185	Tedeschi, James T.	223
Kaplan, Robert M.	255	Telegdi, Melanie S.	303
Kenny, Jack W.	305	Thayer, Robert E.	277
Kershner, John R.	3	Thayer, Stephen	267
Klinger, Burton I.	123	Touhey, John C.	309
Koivumaki, J. H.	91	Uno, Yoshiyasu	91
Kozel, Nicholas J.	213	Veach, Tracy L.	309
Kretschmann, John G.	301	Wahba, Mahmoud A.	43
Landy, David	149	Weinstein, Eugene	247
Lau, Tak-San	163	Westergard, Nelle	301
Lefcourt, Herbert M.	303	Whitney, Richard E.	163
Lloyd, John T.	151	Willows, Donna	303
Marino, C. J.	21	Witter, David W.	37
Markowitz, Martin	247	Wolk, Stephen	297
May, William	157	Yusuf, S. M. Anwar	177

TABLE OF CONTENTS

Ethic group differences in children's ability to reproduce direction and orientation	3
BY JOHN R. KERSHNER	
Population density and affective relationships in three East African societies	15
BY ROBERT L. MUNROE AND RUTH H. MUNROE	
The effects of source and type of prior experience on subsequent conforming behavior	21
BY NORMAN S. ENDLER AND C. J. MARINO	
A re-examination of the vigilance hypothesis in person perception	31
BY EMIL SOUCAR AND JOSEPH DUCETTE	
Interaction of sex and training method in human multiple-choice learning	37
BY MELVIN H. MARX, DAVID W. WITTER, AND JOHN H. MUELLER	
Coalition formation under conditions of uncertainty	43
BY MAHMOUD A. WAHBA	
Group risk taking in military decisions	55
BY KENNETH L. HIGBEE	
The effects of performing one altruistic act on the likelihood of performing another	65
BY MARY B. HARRIS	
Biracial aggression: I. Effect of verbal attack and sex of victim	75
BY WILLIAM D. GENTRY	
Redundancy and congruence of contrast stimulation as determinants of attitude change	83
BY NICHOLAS P. POLLIS, CAROL A. POLLIS, AND JAMES A. RADER	
Unintended experimenter behavior as evaluated by Japanese and American observers	91
BY YOSHIYASU UNO, JUDITH H. KOIVUMAKI, AND ROBERT ROSENTHAL	
Locus of control and expertise relevance as determinants of changes in opinion about student activism	107
BY RICHARD M. RYCKMAN, WILLIAM C. RODDA, AND MARTIN F. SHERMAN	
Some parameters in the perception of gaze	115
BY A. GEORGE GITTER, DAVID MOSTOFSKY, AND MICHAEL GUICHARD	
The effect on pain tolerance of social pressure within the laboratory setting	123
BY DONALD S. STRASSBERG AND BURTON I. KLINGER	
Strategy detection in the Prisoner's Dilemma Game	131
BY DAVID A. SUMMERS, STEPHEN PEIRC, DALE OLEN, AND THOMAS BARANOWSKI	
The effect of skin color and physiognomy on racial misidentification	139
BY A. GEORGE GITTER, DAVID I. MOSTOFSKY, AND YOICHI SATOW	

CROSS-CULTURAL NOTES

- Predictors and determinants of educational performance in the South Pacific 141
By Mica Bennett

- Creative discontinuities of European schoolchildren 147
By Peter J. Christensen

IMPLICATIONS AND REFINEMENTS

- Effects of the defendant's character and ruling on juror judgment: A replication and interpretation 149
By Barbara Smith and David J. Hunt

- Effects of music and imagery of ambiguity upon attraction for similar and dissimilar others 151
By Norman J. Ross, Victor J. Roderick, James F. Connell, Charles J. Edwards, John J. Lewis, Ronald J. Markstein, and Steven J. Markstein

- The effects of verbal stimulation on visual experience 153
By Carol A. Anderson, Candice Norton, Len Hunt, and Janet Ross

- Maternal to temptation: moral development and perceptions of parental behavior among adolescent boys 155
By David M. Olson

CURRENT PROBLEMS AND RESOLUTIONS

- Life and no conditions during the Vietnam war 157
By Thomas Anderson and William May

- Books recently received 159

- Attitudes toward self and traditional/modern attitude change among Hong Kong Chinese 161
By David I. M. Dennis, Howard J. Whitney, and David W. Johnston

- Effects of music of emotion on choice shift in a cross-cultural perspective 163
By David R. Brown and David M. Olson

- The structure and validation of the Henderson Instrumental Learning Scale 165
By Richard W. Henderson, John R. Ross, and Stuart Hunt, Jr.

- A cross-cultural comparison on Rogers' role of demand awareness in the counseling relationship 167
By Donald J. Ross

- Significance level of significance and the significance of psychological data: A comment on Ross 169
By Stuart M. Ross

- Transference, preferences and freedom-expectancy value patterns in the 1961 American campaign 171
By Richard F. Brown, Norman M. Ross, and Stuart Ross

- Transference of emotion: The role of open and presentation mode 173
By A. Gordon Oliver, Thomas J. Ross, and David J. Morrison

<i>Prestige of a harm-deed and subjective estimations of possible harm</i>	225
By ROBERT C. BROWN, JR., BARRY R. SCHLESINGER, AND JAMES T. TERRELLI	
<i>The effects of variations in evaluativeness of traits on the relation between stimulus affect and cognitive complexity</i>	228
By J. W. BUSHNELL	
<i>Attitude-belief and attitude-behavior consistency</i>	241
By WILLIAM H. BEVELAND	
<i>Empathy and communication efficiency</i>	247
By EUGENE WEINSTEIN, KENNETH A. FELDMAN, NORMAN GOODMAN, AND MARTIN MARGOWITZ	
<i>The effect of incredulity upon evaluation of the source of a communication</i>	255
By RAMON J. RHINE AND ROBERT M. KAPLAN	
<i>A field experiment on the effect of political and cultural factors on the use of personal space</i>	263
By STEPHEN TRAYER AND LEWIS ALBAN	
<i>Race and sex in the communication of emotion</i>	273
By A. GEORGE GITTIS, HARVEY BLACK, AND DAVID MONTGOMERY	
<i>Reported activation and verbal learning as a function of group size (social facilitation) and anxiety-inducing instructions</i>	277
By ROBERT E. TRAYER AND LOUIS E. MOORE	
<i>Self-referent accuracy in self-analytic groups</i>	289
By JOSEPH H. PLACK	
REPLICATIONS AND REFINEMENTS	
<i>Locus of control and creativity in black and white children</i>	297
By JOSEPH DUCETTE, STEPHEN WOLF, AND SARAH FENHMAN	
<i>The N and the out: Additional information on participants in psychological experiments</i>	299
By JACK A. NOTTINGHAM	
<i>Feelings toward a frustrating agent as affected by replies to correction</i>	305
By MORTON GOLDMAN, JOHN G. KATZSCHMANN, AND NELLA WESTERGAARD	
<i>Eye contact and the human movement inhibition response</i>	308
By HERBERT M. LEITCH, MELANIE S. TOLSON, DONNA WHITMAN, AND BARBARA BUCKIPAN	
<i>Territorial Markers: Additional findings</i>	308
By RONALD A. HOFFE, MICHAEL S. GELMAN, AND JACK W. KANDY	
<i>The validation of attractiveness judgments as an indirect index of social attitude</i>	317
By JACK M. HERR	
<i>Prior information and attitude change: A replication failure</i>	319
By JOHN C. TOUCHY AND TANCY L. VEAUGH	
BOOKS RECENTLY RECEIVED	321

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MANAGING EDITOR (Name and address) Powell Murchison, 2 Commercial Street, Provincetown, Mass. 02657			
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ABBREVIATIONS OF WORDS USED IN THE TITLES OF JOURNALS

(One-word titles are never abbreviated. The word "the" is not used, nor its equivalent in any other language. The word "of" or its equivalent in other languages is used only to discriminate what would otherwise be identical titles in different languages. The word "and" is always used, but indicated by "&" in the Roman alphabet. Only English words are indicated here, but the corresponding words in other languages should receive a corresponding abbreviation. All abbreviations and all one-word titles should be in italics.)

Abnormal	<i>Abn.</i>	Japanese	<i>Jap.</i>
Abstracts	<i>Abst.</i>	Journal	<i>J.</i>
American	<i>Amer.</i>	Mathematical	<i>Math.</i>
Anatomy	<i>Anat.</i>	Measurement	<i>Meas.</i>
Animal	<i>Anim.</i>	Medical	<i>Med.</i>
Applied	<i>Appl.</i>	Mental	<i>Ment.</i>
Archives	<i>Arch.</i>	Monographs	<i>Monog.</i>
Association	<i>Assoc.</i>	Neurology	<i>Neurol.</i>
Attitude	<i>Attit.</i>	Opinion	<i>Opin.</i>
Australian	<i>Aust.</i>	Orthopsychiatry	<i>Orthopsychiat.</i>
Behavior	<i>Behav.</i>	Personality	<i>Personal.</i>
British	<i>Brit.</i>	Personnel	<i>Person.</i>
Bulletin	<i>Bull.</i>	Philosophy	<i>Philos.</i>
Bureau	<i>Bur.</i>	Physics	<i>Phys.</i>
Canadian	<i>Can.</i>	Physiology	<i>Physiol.</i>
Character	<i>Charac.</i>	Proceedings	<i>Proc.</i>
Children	<i>Child.</i>	Psychiatry	<i>Psychiat.</i>
Chinese	<i>Chin.</i>	Psychoanalysis	<i>Psychoanal.</i>
Clinical	<i>Clin.</i>	Psychology	<i>Psychol.</i>
College	<i>Coll.</i>	Psychosomatic	<i>Psychosomat.</i>
Comparative	<i>Comp.</i>	Quarterly	<i>Quart.</i>
Consulting	<i>Consult.</i>	Religious	<i>Relig.</i>
Contributions	<i>Contrib.</i>	Research	<i>Res.</i>
Development	<i>Devel.</i>	Review	<i>Rev.</i>
Educational	<i>Educ.</i>	School	<i>Sch.</i>
Experimental	<i>Exper.</i>	Science	<i>Sci.</i>
General	<i>Gen.</i>	Social	<i>Soc.</i>
Genetic	<i>Genet.</i>	Statistics	<i>Stat.</i>
Indian	<i>Ind.</i>	Studies	<i>Stud.</i>
Industrial	<i>Indus.</i>	Teacher	<i>Teach.</i>
International	<i>Internat.</i>	University	<i>Univ.</i>
Italian	<i>Ital.</i>		

10 APR 1973

GENERAL INSTRUCTIONS

1. The proper sequence for the parts of your submitted manuscript is as follows: (a) references, (b) footnotes, (c) tables, (d) figures, and (e) figure legends. However, monographs start with a table of contents and may have an acknowledgment page before the text and an appendix immediately after the text.
2. Use heavy typewriter paper, $8\frac{1}{2} \times 11$ inches, double-space all lines, and leave margins for editorial work. Do not use onionskin or odd sizes of paper.
3. Submit original typewritten copy and one carbon. Retain second carbon for proofing.
4. Retype any page on which written corrections have been made.
5. Do not begin a sentence with a numeral.
6. An adequate summary serving as the conclusion of the text is good form.
7. Each quotation should indicate the page number of the original source. The original publisher must give permission for lengthy quotations and use of tables or figures.
8. Do not fold your manuscript.
9. Enclose your covering letter with your manuscript. If you are unknown to the Editor, kindly state your credentials.

FORMAT AND SPECIFIC INSTRUCTIONS

A. TEXT DIVISIONS

I. THE TITLES OF JOURNAL ARTICLES AND THE MAJOR SUBDIVISIONS OF MONOGRAPHS ARE PRINTED IN TEN-POINT CAPS CENTERED ON THE PAGE

A. THE NEXT SUBDIVISION TITLE IS PRINTED IN CAPS AND SMALL CAPS CENTERED ON THE PAGE

1. Then *Italics, with Principal Words, Upper and Lower Case, Centered on the Page*a. Then *italics, upper and lower case, 1-em run-in side head.*(1). Then *italics, upper and lower case, 2-em run-in side head.*(a). Then *italics, upper and lower case, 3-em run-in side head.*

[Further subdivision should be merged into the text without marginal indentation, should be numbered with small letters.]

B. REFERENCES

References should be arranged in alphabetical order by author, numbered and referred to in the text by number (2).

The proper form of a book reference is as follows:

2. Doe, J.
- The Preparation of Manuscripts*
- . New York: Holt, 1963. Pp. 400-418.

The proper form of a journal reference is as follows:

2. Doe, J. The preparation of manuscripts.
- J. Gen. Psychol.*
- , 1963, 68, 450-462.

If in the text it is desirable to refer to a page, thus (2, p. 45).

C. FOOTNOTES

Use as few as possible and number consecutively in the text thus.¹¹ Footnote (on the separate footnote page).

D. TABLES

Tables should always be typed on separate sheets of paper and should be Arabic numbered (Table 2). Construction should be such that vertical lines are unnecessary. Always indicate in the text the approximate insertion place for a table.

E. FIGURES

Figures should be submitted as glossy prints of the approximate size for final reproduction (ordinarily 4-4½ inches in width). Lettering and lines should be sharp and clean. Figures should be Arabic numbered (Figure 2) in the text, with the approximate insertion point indicated. Each figure requires a legend, but all legends should be submitted double-spaced on a separate Figure Legends page.